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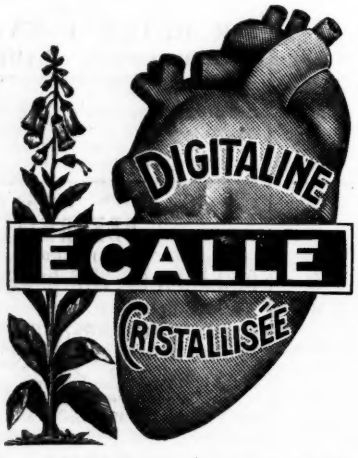

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Observations
ON
THE ETIOLOGY AND TREATMENT OF SEBORRHOEIC ERUPTIONS.

A Preliminary Report

BY
H. W. BARBER, M.D., CAPTAIN R.A.M.C.(T.C.),
AND
H. C. SEMON, M.D., CAPTAIN R.A.M.C.(T.C.).

THE widespread distribution and intractability of seborrhoeic eruptions among troops on active service will sufficiently excuse the early publication of some new conceptions as to their nature and treatment.

The condition is very prevalent, and Major H. MacCormac, R.A.M.C., was fully justified in his assertion at a recent lecture "that there is practically no skin disease in the army that is not complicated by seborrhoea." The manifestations are protean, and include such apparently widely differing eruptions as a crusted and weeping eczema of the scalp, a dysidrotic eczema or cheiropompholyx of the fingers, and a patch of lichenification on the calf of the leg.

The appearances vary according to the anatomical situations and chronicity of the lesions, and the degree of secondary microbial infection; the dermatological textbooks which are based entirely on the records of ordinary civil experience afford only a moderate degree of assistance in their elucidation. Every medical officer on active service will have met with the military varieties of the disease, which for convenience may be classified in three groups:

1. Those which arise on the scalp, face, ears, and neck.
2. Those which are found on the trunk below the neck and on the extremities, and which are very commonly associated with one or both of the two exceedingly common parasitic diseases—scabies and pediculosis. The regions then involved correspond very closely with the sites most commonly affected by the acarus and pediculus, and will not be separately dealt with in this communication.[1]
3. Those which arise on the trunk and limbs, and have no demonstrable association with either scabies or pediculosis. They are mainly follicular, and not generally acute in type, and form the large bulk of cases which in civilian practice are grouped together under the term of "eczema." Want of space forbids a detailed discussion of this group also.

CLINICAL APPEARANCES OF SEBORRHOEIC ECZEMA OF THE HEAD AND NECK.

In the most acute stage the primary lesions are groups of small vesicles on an erythematous base, but they are seldom seen, as the associated pruritus leads almost immediately to their forcible rupture by scratching. The serum exuded becomes rapidly infected by the ordinary pyogenic cocci and a septic crust results. The appearance at this stage is not unlike that seen in the impetigo contagiosa of hospital out-patient departments, and is doubtless responsible for much confusion both as regards nomenclature and treatment. In seborrhoeic dermatitis the crust covers a patch of "eczema" easily irritated by strong applications, whereas in impetigo contagiosa there is no such underlying condition, and the local infection rapidly clears up with the destruction of its cause—a streptococcus—and does not tend to relapse.

In the acute condition, as it affects the head and neck, we find crusting and weeping patches of eczema on the scalp, eyebrows, and beard regions. On the ears, where the skin is relatively thin, exfoliation and bleeding sometimes result, and there is frequently an associated eczema of the external auditory meatus. Deep and intractable septic fissures commonly persist in the post-aural folds and tax the skill and patience of the physician to the utmost.

In about 85 per cent. of these cases there is associated seborrhoeic dermatitis of the anterior and posterior mid-thoracic regions, while a common and troublesome sequela is the development of constantly recurring boils, especially on the neck just below the scalp margin.

In a very large number of our cases we have noted in synchronism with the above-described skin lesions an associated nasal and nasopharyngeal catarrh, to which we shall presently refer.

The stage of subsidence is characterized by desiccation of the lesions and separation of the crusts. Its duration is variable and depends largely on the scientific application of suitable remedies. Inspection of the scalp in the acute stage commonly reveals congestion and erythema of the epidermis. This persists on the scalp and eyebrows for a considerable time after all other traces of the affection have subsided. The patient who has once had an attack is very liable to relapse. In this respect the clinical history resembles the civilian prototype of the disease, and it was this consideration that first led us to the conception of an underlying constitutional dyscrasia, which might be responsible not only for the skin eruptions, but also for the not uncommonly associated nasal and nasopharyngeal catarrh.

In this assumption we are supported by an eminent French dermatologist, M. J. Darier,[2] who has correlated the tendency to seborrhoeic eruptions with a peculiar type of skin, to which he has given the name "kerose." Its clinical stigmata are briefly:

1. A brownish or dirty yellowish complexion.
2. Wide-mouthed and prominent pilosebaceous follicles, with hyperkeratosis of their orifices.
3. A slight thickening of the skin, with diffuse hypertrophy of the horny layer, and a tendency to fine desquamation.

It is on this substratum or *terrain* that seborrhoeic manifestations most commonly appear.

In the first decade of life there may be pityriasis sicca of the scalp; towards puberty and after, seborrhoea oleosa; from the fifteenth to twenty-fifth years we frequently find acne vulgaris, rosacea, and the so-called eczematides, while seborrhoeic alopecia takes its origin between the twenty-fifth and thirtieth years. The areas of the body affected are both diffuse and regional. The middle area of the face, the medio-thoracic regions, the flexures of the limbs, and the pubic and internatal regions, are peculiarly susceptible.

The etiological factors, according to Darier, are two: Sexual development, and erroneous diet, in which excessive carbohydrates and stimulants, faulty mastication, constipation, etc., all play a part. Darier's conception has found many supporters. In his view, the bacteria described as specific by Sabouraud and Unna (and always met with abundantly in seborrhoeic lesions) owe their activity and pathological effects mainly to the soil on which they are growing, which in its turn is dependent on the underlying constitutional state of the patient.

We are entirely in sympathy with this opinion, and we believe that the frequent relapses suffered by patients with such eruptions are thus to be explained. It is true that local treatment alone will remove the seborrhoeic eruptions, but the same is the case with psoriasis, the constitutional basis of which is now admitted by nearly all dermatologists.

A careful study of many hundreds of cases of seborrhoeic eczema has convinced us that the main factor in their production is a metabolic dyscrasia, or error in biological assimilation, while external irritants such as parasites, mustard gas, and bacteria, are the excitants, and play the part of spark to powder.

The frequent association of nasal and nasopharyngeal catarrh with the outbreak on the skin suggested a close relation between them; and one of our colleagues, Captain C. Jones-Phillipson, a specialist and writer on diseases of the upper respiratory tract, very kindly undertook the examination of a large number of cases submitted to him. A full report of his findings will, it is hoped, be published by himself or in collaboration with us, at some future date. Suffice it here to say that, in 59 out of 93 cases examined, posterior rhinoscopy revealed a yellowish mucopurulent secretion. The discharge varied in amount. In some cases the vault of the nasopharynx was coated, as if painted over with a scum-like mucus; in others, again, it was in amount sufficient to be expressed into the pharynx on exciting a forcible elevation of the soft palate. In a further 24 of these cases conditions of the nose and nasopharynx were demonstrated sufficient to warrant the

supposition that a similar state of sepsis as in the 59 already recorded had previously existed, and recurred from time to time.

Simultaneously with his examinations some bacteriological experiments were carried out, with the result that a streptococcus of the *faecalis* group (in addition to numerous staphylococci) was recovered from both the nasal mucosa and the eruptions on the skin in many such patients.

Darier does not lay stress on the nasopharyngeal catarrh so commonly associated with seborrhoeic eczema, but we were greatly assisted in our thesis by a perusal of some clinical studies in children by Czerny.[3] His findings may be summarized under four headings:

1. Certain children present a congenital susceptibility to catarrh—that is, to bacterial infection of their skin and mucous membranes, as well as to certain nervous disturbances. To this tendency he gives the name of "exudative diathesis."
2. The manifestations of this diathesis are provoked by excess of diet, and its subjects are particularly intolerant of carbohydrates and fats.
3. As a result of the repeated acute infections of the mucous membranes and skin, each of which is usually accompanied by an abnormally high temperature, secondary changes take place in the lymphoid tissues of the body, giving rise to adenoid vegetations, parenchymatous tonsillitis, and adenitis, especially localized to the cervical glands.
4. The condition known as the status lymphaticus is the extreme or end form of the exudative diathesis.

In England, Dr. H. C. Cameron[4] is a strong supporter of Czerny's views. He adduces an important observation of his own, and points out that children of the exudative diathesis (or, as he prefers to call it, the status catarrhalis) are subject to an extreme "wateriness" of their tissues which gives them a fictitious appearance of plumpness. Their really wasted condition is revealed in three or four days by exclusion or reduction of their carbohydrate dietary, and there is a coincident loss of weight. A return to plumpness is ensured by a resumption of the bread and sugar, which in pre-war days were the staple ingredients of most meals in certain classes of society.

It will be noted that both Czerny and Cameron lay considerable emphasis on the etiological importance of a carbohydrate dietary in the production or aggravation of the exudative diathesis. We do not believe that an excess of carbohydrates plays the main part in the production of seborrhoeic eczema, but we are convinced that excess in this respect has a contributory and possibly a deciding influence in the production of the acute manifestations. Many of our patients have admitted excess of carbohydrates—several an almost exclusive dietary of sweet biscuits, jam, and chocolate prior to the onset of the eruptions—but the metabolic problem will be discussed as a whole subsequently.

Types of Seborrhoeic Individuals.

There are in our collective experience two types mainly of seborrhoeic individuals:

1. Those congenitally predisposed, or who have acquired the tendency in infancy. These patients give a history of operations for adenoids, glands in the neck, frequent attacks of bronchitis, eczema, etc., in their childhood. They have thus in their youth conformed in all respects to the type of individual described by Czerny as exhibiting the "exudative diathesis."
2. Those in whom the state has suddenly appeared as the result of active service and its inevitable conditions.

1. Patients who conform to the first type, as may have been supposed, are more difficult to treat, and far more likely to relapse after apparent cure, than individuals in the second group.

The subject is usually a young adult with the adenoid facies, prominent and often carious teeth, high-arched palate, enlarged tonsils, and the victim of constantly recurring colds and sore throat, bronchitis, asthma, etc., with which have been associated for many years or "as long as he can remember," acute outbreaks of eczema of the scalp, ears, face, trunk, and extremities, each attack of which appears to have become more obstinate and difficult to get rid of than the last.

2. The second type of affected individual develops symptoms for the first time on active service. An inquiry into his past history does not usually elicit a story of frequent colds or catarrhal attacks. The configuration of the upper respiratory tract is apparently normal, although there is often an associated subacute nasopharyngitis of the type noted as characteristic by Captain Jones-Phillipson. Prognosis is better in this type of case, and relapse less likely to occur.

The Urine of Seborrhoeic Patients.

In our experience, there is one feature which is common to both types of seborrhoeics, and that is a pronounced and remarkably constant hyperacidity of the urine. It was this association that first led one of us (H. W. B.) to the assumption that the seborrhoeic state is really a manifestation of acidosis. It has been proved by us again and again that as soon as the urine becomes amphoteric, or is made alkaline by the administration of drugs by the mouth, the acute stage of a seborrhoeic eruption comes to an end, and the patient rapidly improves in health, and that, conversely, the urine is invariably acid at the onset of a relapse. The chemical examination of the urine, it is true, has never yet revealed the presence of diacetic or beta-oxybutyric acids, nor is it suggested that the degree of acidosis present at all resembles that commonly met with in diabetes, but there are certain resemblances in the clinical features of the two diseases. The striking susceptibility in both to secondary infections, such as carbuncles and boils, the congested appearance of the extremities, the hyperacidity of the urine, and the reaction to treatment by alkalis, are worthy at least of cursory examination.

The chemical investigation of the condition of relative acidosis in such cases as we have delineated is still incomplete; but one test suggested by A. W. Sellards,[5] and considered by him to be the most delicate, was applied to a large number of cases. This test consists in determining the "alkaline tolerance." The meaning of this phrase may be explained as follows:

The normal alkalinity of the blood depends on the existence in it of certain fixed bases, chiefly carbonates and phosphates; these are the so-called "buffer" salts. They combine with and partially neutralize acids; without their presence acid by-products of metabolism—for example, CO_2 and lactic acid—would render the reaction of the blood so acid as to be physiologically intolerable. In a normal person with a sufficiency of these fixed bases in his blood and tissues, the intake of any appreciable quantity of alkali—for example, sodium bicarbonate—is followed by its immediate excretion in the urine. If, however, the fixed bases are deficient, additional alkali taken, instead of being excreted, is stored in the tissues and the urine remains acid.

Sellards has shown that 5 grams (about 75 grains) of sodium bicarbonate given by the mouth is practically the upper limit of normal tolerance, this amount being almost invariably sufficient to change the reaction of the urine of a normal person from acid to alkaline. In cases of acidosis very much larger quantities must be given before the reaction of the urine changes.

The Alkaline Tolerance of Seborrhoeic Patients.

When the possibility of the existence of acidosis in seborrhoeic patients first occurred to us we immediately began to test the therapeutic effects of giving them an alkaline mixture thrice daily an hour or half an hour before meals. Our original mixture consisted of sodium citrate gr. xxx, sodium bicarbonate, potassium carbonate āā gr. xv, compound infusion of gentian 1 oz.

The beneficial result of this treatment was immediately apparent, but it was observed that many patients did not pass alkaline urine until after they had taken the medicine for many days or even weeks, and in some the urine remained persistently acid. We then decided to employ a mixture modelled on a formula suggested by Dr. Langdon Brown for the control of acidosis in diabetes—namely, sodium bicarbonate ʒ j, potassium citrate gr. xxx, calcium lactate gr. v, magnesium carbonate gr. v, chloroform water 1 oz.; this preparation has now been given in hundreds of cases, and careful observations have been made on the reaction of the urine from day to day. As a result of its use two fundamental facts have been established:

1. That the majority of patients with seborrhoeic manifestations show a markedly increased alkaline tolerance, many of them to an astonishing degree.

2. That in nearly all cases, once the urine has been rendered alkaline, all active inflammatory processes cease and the eruption rapidly clears.

As examples of unusual alkaline tolerance the following cases may be quoted:

CASE I.

This patient took 4 oz. of above mixture per diem for three days: urine still strongly acid; then 6 oz. per diem for twelve days: urine still acid; then 9 oz. per diem for two days: urine still acid; after 9 oz. per diem for two more days urine became alkaline—that is to say, this patient consumed during a period of nineteen days 15 oz. of sodium bicarbonate and 7½ oz. of potassium citrate without passing an alkaline urine, and it was not until he was taking 9 drachms of sodium bicarbonate and 4½ drachms of potassium citrate per diem that an alkaline urine was obtained.

CASE II.

This patient took 3 oz. of the mixture daily for twenty-two days: urine still acid at the end of this time. He then took 4½ oz. per diem for three days and 9 oz. per diem for two days: urine still acid. After taking 9 oz. per diem for five days the urine became alkaline.

CASE III.

This patient consumed 6 oz. of the mixture daily for twenty-one days, and his urine was still strongly acid at the end of this time.

Many other cases showing a similar alkaline tolerance could be given. Such extreme instances are, however, exceptional, but the very great majority of patients with active seborrhoeic lesions show a tolerance far greater than that observed in normal persons in whom a single dose of the mixture is sufficient to render the urine alkaline.

Therapeutic Effect of Alkalis in Seborrhoeic Patients.

After studying the effect of giving alkalis in some three hundred cases with seborrhoeic manifestations, we have satisfied ourselves that their action may be described as specific. As remarked above, the tolerance varies in different persons, so that the quantity of alkali required to produce the desired effect must be determined by repeated examination of the urine.

In the great majority of cases the activity of the inflammatory processes ceases as soon as the urine is rendered virtually alkaline.

So constant is this phenomenon that it is almost always possible to predict with confidence that, should a patient under alkaline treatment present new or active lesions (for example, eczema or boils), his urine will be found to be still acid; an increased quantity of alkali must therefore be given until the reaction of the urine changes. As might be expected, the lower the alkaline tolerance the more rapid is the reaction to treatment, and the less the tendency to relapse.

The most convincing clinical proof of the influence of alkalis in these cases was afforded by patients in whom, after an initial cure, active seborrhoeic manifestations recurred when the alkaline mixture was discontinued, only to disappear again, often without any local application, when the alkaline treatment was resumed.

The following is a brief extract from the clinical notes of three such patients:

CASE IV.

J. A.; admitted February 23rd, 1918, with severe localized patches of moist seborrhoeic eczema on the right cheek and stains of old lesions on the right eyebrow. The urine was intensely acid. He was treated with the sodium citrate mixture, 2 oz. thrice daily. On the following day the patches on the face were drying up; the urine was still acid. On February 28th there was marked improvement, and the urine was alkaline. The treatment was continued until March 7th, when it was stopped. On March 18th there was a persistent patch on the chin, the left eyebrow was impetiginized, and the urine was again acid. The mixture was resumed as above. Two days later the lesions had much improved; the urine was alkaline and remained so. On March 22nd the chin was slowly improving and the cheek was healed. By the end of the month all lesions were quite healed.

Note that improvement dates from resumption of medicine. The local treatment was the same throughout—namely, calamine liniment.

CASE V.

F. A.; admitted January 19th, 1918, with symptoms of a very seborrhoeic type: acute weeping seborrhoeic eczema of face, typical nasopharyngitis, boils on back. Previous similar attack in France in 1916. Had had slight attacks in civil life also. The urine was acid. He was treated with sodium citrate mixture, 1 oz. thrice daily. On January 24th some improvement was noted; the urine was less acid. On the 26th the dose was increased to 2 oz. thrice daily; his condition was much improved; urine still less acid. On the 29th he continued to improve; urine slightly alkaline. On this date all treatment was omitted.

January 31st. First relapse. Sodium citrate mixture, 2 oz. thrice daily, resumed from this date. On February 6th the condition was again quiescent; urine neutral. Medicine again omitted.

February 16th. Second relapse, now acute; urine very strongly acid. Mixture resumed, 2 oz. thrice daily. On February 22nd his whole appearance was changed, and on the following day he was quite free of all lesions; urine alkaline. The treatment was continued, and on March 1st his condition was very satisfactory; urine amphoteric.

Note that two well-marked relapses followed omission of the sodium citrate mixture. The local treatment throughout was by calamine liniment.

The following striking case was specially examined for the purposes of this report, and is under treatment at the time of writing.

CASE VI.

A. O.; admitted June 6th, 1918, with active scattered impetigo on chin, root of nose, and both ears. Urine very acid. The following day treatment by sodium citrate mixture, 1 oz. thrice daily, was commenced. On June 9th his condition remained the same; urine still acid. The dose of the mixture was then doubled, and on June 11th the lesions on face were much improved; urine alkaline. The medicine was now omitted. On June 13th there were fresh acute lesions on the left eyebrow; urine again acid. Sodium citrate mixture, 1 oz. thrice daily, resumed. June 15th: Left eyebrow clearing; urine alkaline. Medicine again omitted. June 17th: Seborrhoeic eczema of right external auditory meatus; urine again acid. Treatment by sodium citrate mixture, 2 oz. thrice daily, was resumed and continued without local treatment, and on June 22nd all lesions were completely healed and the urine alkaline.

Note that the relapses in this case followed the omission of the mixture with an almost mechanical precision. The local treatment throughout was by calamine liniment.

In two cases of acute seborrhoea of the head and face no local treatment whatever was given, neither lotion, powder, ointment nor fomentation from the day of admission to the day of discharge. The affected areas cleared up completely under the influence of the above described alkaline mixture—in the first case in one week, in the other in ten days from the date of commencement of treatment.

LOCAL TREATMENT.

It is not hereby contended that administration of alkalis abolishes the necessity for local applications, but it is claimed that this method of treatment hastens in remarkable fashion the clearing of the various eruptions dependent on the seborrhoeic state, and, provided that the patient be then given an adequate quantity of alkaline salts per diem, relapses will not occur.

The best local applications are oily alkaline suspensions of calamine—for example:

℞ Calamine praep.	...	...	...	...	...	gr. xxx
Aqua calcis ...	...	...	...	...	...	ʒ ij
Ol. arachis, vel ol. olivae			...	...	ad	ʒ j

Most seborrhoeic lesions are amenable to this application, which should be renewed not less than twice daily, on lint. When oil is difficult to obtain in sufficient quantity, we have found sodium bicarbonate in 2 per cent. solution in water very useful. It must be applied thrice daily at least, as a "soak" on lint under jaconet, and should be changed once during the night if the lesions are very acute.

At a later stage when erythema and congestion with irritability of the skin surface persist, the part should be covered with lint or linen smeared with Lassar's paste. All hairy parts, with the exception of the eyebrows and lashes, should be close cropped or shaved.

We consider that the curative value of local alkaline treatment rests on the same fundamental principle as the administration of alkalis by the mouth. Practically all pathogenic bacteria prefer slightly acid media. One and the same inoculation from a seborrhoeic eyebrow on two agar slopes of different reactions afforded some exceedingly interesting and significant results, and opened up a large field for speculation. The normal slightly acid medium produced an abundant growth of *Staphylococcus aureus* and *albus*, with numerous small clear colonies of streptococci. On the other slope, the reaction of which was just alkaline to litmus, there were found no streptococci at all, and the comparatively few colonies of staphylococci that grew were of the *albus* variety only, and markedly pleomorphic and degenerative in type. Much work on these lines remains to be done.

Diet.

We have purposely avoided a prolonged examination of the theoretical considerations that underlie the mechanism of acidosis, but desire to raise one question as to its mode of production in patients with the status seborrhoeicus.

In his very admirable summary of the normal mechanism whereby a slightly alkaline reaction of the blood is continuously maintained, Sellards upholds three factors as of primary importance:

1. Intake of fixed bases in the food.
2. Elimination (*a*) of carbon dioxide by the lungs, (*b*) of acid by the kidney.
3. Neutralization of acid in the body by ammonia.

Now the fixed bases in the food are derived mainly from fresh vegetables and fruit, and a deficiency of these is well known to lead to a decrease of the alkaline salts, particularly the carbonates, and the mono-acid dibasic phosphates of sodium, calcium, and magnesium—the so-called buffer salts—in the blood and urine.

The army ration, excellent in all other respects, is unavoidably deficient in just those fresh materials that are most important in maintaining the requisite equilibrium between acid and basic radicals.

We have eliminated scurvy—a serious factor in the campaigns of previous centuries—by the judicious selection of dietary and by our advances in the preservation of protein substances.

At this juncture it would be altogether premature to lay it down as an axiom that the modern army ration is responsible for the seborrhoeic diathesis, but we will go so far as to suggest that it is probably contributory, directly or indirectly, in its production and aggravation. The biological influence of carbohydrates in the production of the catarrhal state, on which Czerny and Cameron lay great stress, is, in our opinion, an accessory factor. We may here cite the case of one of our colleagues—himself a dermatologist—with a remarkably seborrhoeic diathesis. He can produce at will (and has twice actually done so experimentally) an acute typical seborrhoea of the head and face by rapid ingestion of an excessive quantity of sugar.

It may be assumed that if the digestion and other functions of the body proceed normally, carbohydrate, if taken in moderate quantity, is completely oxidized to CO_2 and water, but if for any reason oxidation is interfered with, intermediate acid substances (of stronger acidity than CO_2) remain incompletely oxidized, and, in the absence of a sufficiency of neutralizing buffer salts, tend towards a reduced alkalinity of the blood and tissue fluids. Similarly, according to Sellards and other writers, protein, particularly meat, is one of the chief sources of acid substances during its metabolism. This being granted, an excess of meat (which is supplied very generously to our armies) will itself tend to the production of acidosis, and will thus reinforce the action of the carbohydrate factor in this direction.

A condition of relative acidosis is produced on these assumptions by two factors:

1. A deficiency of the "buffer salts" that counteract the production of acid.

2. An increased production of acid substances, probably owing to faulty metabolism of excessive carbohydrate and protein substances in the diet.

CONCLUSIONS.

As a result of our investigations we may conclude:

1. That there is a constitutional state, which may exist from infancy or may appear *de novo* in adults, and which may be termed the status catarrhalis or exudativa (Czerny). Where this condition exists the skin and mucous membranes show an abnormal susceptibility, not only to various bacterial infections, but also to mechanical and chemical irritation.

2. Persons in whom the status catarrhalis is present, either permanently or temporarily, are liable to develop the multitudinous eruptions which have been variously termed seborrhoeic eczema or dermatitis, true eczema, pustules, boils, and the wrongly termed "impetigo"—really an impetiginized seborrhoeic eczema. These manifestations, in whole or part, are intimately dependent or associated with the existence of an underlying dyscrasia, to which we have ventured to give the name of

The Status Seborrhoeicus.

3. There is considerable clinical and therapeutic evidence to suggest that all patients with the status seborrhoeicus are suffering from a relative acidosis. We are of opinion that this condition may have resulted from a diminution of the intake in their food of the fixed bases—the mono- and di-sodium phosphates, and the carbonates, which are normally present in fresh fruits and vegetables, and which are largely responsible for the maintenance of an exact alkaline-acid equilibrium in the blood and tissue fluids.

4. As a practical outcome of these considerations there is abundant clinical evidence of the value of alkalis in the treatment of seborrhoeic eczema.

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A Collective Investigation

OF

TEN THOUSAND RECRUITS WITH DOUBTFUL HEART CONDITIONS.

Conducted at the National Hospital for Diseases of the Heart by C. CHAPMAN GIBBES, R. O. MOON, S. RUSSELL WELLS, P. HAMIL, F. W. PRICE, *and* J. STRICKLAND GOODALL.

REPORT II,*

BY

S. RUSSELL WELLS, M.D., B.Sc.

BEFORE investigating the etiology of any particular cardiac disorder, it was considered desirable to determine the incidence, on the whole 10,000 cases, of the various diseases which have been supposed to lead to damage of the cardiac valves or myocardium. In every case inquiry was made for a history of the following ailments:

Rheumatic fever	Tonsillitis	Influenza
Chorea	Scarlet fever	Syphilis
Rheumatism	Diphtheria	Gonorrhoea
Growing pains	Pneumonia	

and also as to whether the recruit had been subjected to muscular strain or not.

Rheumatic Fever.

Since rheumatic fever, or acute rheumatism, is commonly agreed to be one of the most frequent causes of organic lesions of the heart, it was felt desirable to determine the percentage of the cases examined giving a history of this disease. It is important to define accurately what is meant by the term rheumatic fever. The word "rheumatism" is popularly used to describe a variety of affections. Rheumatoid arthritis is frequently spoken of by the laity as rheumatism. The aching pains in the joints which accompany various acute diseases such as influenza are often called rheumatic pains, as are the joint pains occurring in tonsillitis, though here some consider that there is more justification for the use of the word "rheumatic." In addition to this there are the various slighter forms of rheumatism which may differ only in degree from rheumatic fever. Some writers, following Poynton, regard chorea as a manifestation of rheumatism, and go so far as to speak of chorea as "cerebral rheumatism." We have, therefore, thought it well to confine the term "rheumatic fever" to cases in which there is a distinct history of fever, pain and swelling of the joints, and confinement to bed for several weeks. This, of course, does not exclude the possibility of some cases of gonorrhoeal rheumatism being classified as rheumatic fever, but the absence of a history of any urethral discharge and a consideration of the patient's statement usually prevented any doubt arising.

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On account of the painful nature of the complaint and the inability to use the affected joints, together with the long confinement to bed which the disease usually entails, the patient's recollection of an attack of acute rheumatism is generally fairly vivid, so that, as a rule, little doubt arises as to the nature of the illness from which he has suffered.

Of the 10,000, 1,921 cases—that is to say, 19.2 per cent.—gave this clear and unequivocal history of rheumatic fever.

Since the 10,000 cases were all sent up for examination because a doubt had arisen in the minds of the examining medical boards as to their cardiac condition, and since acute rheumatism is a recognized cause of cardiac derangement, these figures cannot be used to estimate the incidence of rheumatic fever on the general population. The 10,000 cases are a selected sample, and the selection was such as practically to ensure that a history of acute rheumatism would be commoner in the sample than in the corresponding classes of the population of London.

Chorea.

Chorea, like acute rheumatism, is so definite an ailment, and persists, as a rule, for so long a time, that histories of this affection may usually be relied upon. Of the 10,000 cases examined, 265—that is, 2.6 per cent.—gave a history of chorea. With a view to determining if the material with which we have to deal lent any support to Poynton's theory of chorea being really a form of rheumatism, the coefficient of correlation between the two was worked out on Pearson's formula: 101 of the 10,000 cases gave histories of both chorea and rheumatic fever, 164 of chorea without rheumatic fever, 1,820 of rheumatic fever without chorea, and 7,915 gave no history of either of these affections. The coefficient of correlation was 0.31 ± 0.02, χ^2 being 63.

The correlation coefficient is a figure which shows the degree of relationship between two sets of facts or measurements. If every case of chorea gave a history of rheumatic fever, and every case of rheumatic fever was followed or preceded by chorea, the correlation coefficient of chorea and rheumatic fever would be $+1$; that is, there would be absolute correlation between them. If there was no association between them, and a patient who suffered from chorea was no more or less likely to give a history of rheumatic fever than the rest of the population, the correlation coefficient would be 0. If chorea and rheumatic fever were mutually exclusive the correlation coefficient would be -1. Where the correlation coefficient is between 1 and 0.75, we speak of high correlation; between 0.75 and 0.50, considerable correlation; between 0.50 and 0.25, moderate correlation; below 0.25, low correlation. It is obvious that in working out such correlation as this there will be a margin of error. This can be calculated, and after any correlation cofficient we shall state what it is. Thus, the correlation coefficient between the history of rheumatism and chorea is 0.31, the error being ± 0.02; that is, the correlation coefficient is not greater than 0.33 nor less than 0.29. But the probability of our calculated correlation coefficient being wrong depends upon the number of cases taken, and how they are grouped. We have, therefore, to calculate the likelihood of it being correct; for it may be that our grouping of figures is purely due to chance. We can calculate this probability. To do so we work out the value of what is called χ^2. The higher χ^2 is, the less likelihood is there of our correlation coefficient of not more that 0.33 or less than 0.29 being due to chance. If χ^2 were 1 the likelihood of our figure being a chance association is 8 in 10; if χ^2 were 5 the likelihood would be 17 in 100; if it were 10, 19 in 1,000; when χ^2 is 15 the probability of our correlation figure being due to chance sinks to less than 18 in 10,000. The actual number for χ^2 here was 63, so that the likelihood of our correlation coefficient of 0.31 ± 0.02 being a mere chance number is infinitesimal. This coefficient comes within the limit of what Pearson has defined as moderate correlation, and is about the same as the correlation between the severity of an attack of small-pox and the number of years since vaccination. It affords a certain amount of support to Poynton's theory.

Rheumatism.

As has been pointed out, when speaking of rheumatic fever, a history of rheumatism or rheumatic pains must be received with considerable doubt, the popular use of the word being too vague to enable one to arrive at any definite opinion as to the pathological entity referred to. If the histories of "rheumatism" referred to some form of the same disease as rheumatic fever, or were all really accounts of a slighter attack of the same affection, we should expect to find a definite correlation between them. We therefore calculated out the correlation coefficient for rheumatic fever and "rheumatism" in our cases; 266 gave a history of rheumatic fever and "rheumatism," 1,347 a history of "rheumatism" without rheumatic fever, 1,655 a history of rheumatic fever without "rheumatism," and 6,732 no history of either rheumatic fever or "rheumatism." The coefficient of correlation was 0.08 ± 0.02, χ^2 being 9.2. This correlation coefficient is so small as to be practically negligible. We have therefore no right to assume that where a recruit gave a history of "rheumatism" he had suffered from anything of the same nature as true acute rheumatism.

Growing Pains.

The arguments used with reference to rheumatic fever and "rheumatism" equally apply to a history of growing pains; 563 cases gave a history of both rheumatic fever and growing pains, 2,086 a history of growing pains without rheumatic fever, 1,358 a history of rheumatic fever without growing pains, and 5,993 no history of either rheumatic fever or growing pains. The correlation coefficient works out at 0.06 ± 0.02, χ^2 being 9.7. We are therefore not justified on these figures in assuming the identity of growing pains and acute rheumatism.

Tonsillitis.

Tonsillitis has been considered by many writers as a rheumatic affection. It was therefore thought well to calculate the correlation between acute rheumatism and tonsillitis in the 10,000 cases: 525 cases gave a history of both rheumatic fever and tonsillitis, 1,685 a history of tonsillitis without rheumatic fever, 1,396 a history of rheumatic fever without tonsillitis, and 6,394 no history of either disease. The coefficient of correlation was 0.13 ± 0.02, χ^2 being 38. The correlation here is appreciably higher than in the case of "rheumatism" or growing pains, but is too low to be seriously considered.

Scarlet Fever.

Of the 10,000 cases examined, 2,185—that is, 21.8 per cent.—gave a history of scarlet fever. Since scarlet fever is stated to be not infrequently followed by acute rheumatism or some affection resembling that disease, it is of some interest to determine the association between a history of scarlet fever and rheumatic fever in these cases. Of those who had had scarlet fever, 479—that is, 22 per cent.—gave a history of rheumatic fever as well. In 70 of these cases there was a definite history of the rheumatic affection having immediately followed the scarlet fever, but, when the association between scarlet and rheumatic fevers in the 10,000 cases is investigated by Pearson's formula, it is found that the correlation coefficient is so small as to be negligible—namely, 0.08 ± 0.02.

Summary as to Rheumatism, Chorea, and Growing Pains.

Reviewing the above results, it may be stated that the investigation of the material at our disposal by means of the correlation coefficient lends some slight support to the view that chorea and acute rheumatism are the same disease, but none to the supposition that a history of "rheumatism" or growing pains is any evidence of a true rheumatic affection, nor does it afford any evidence of the rheumatic nature of tonsillitis or reveal any association between true rheumatism and scarlet fever.

It must not, however, be assumed that because we are unable to find any association between these affections and acute rheumatism, they may not be the efficient cause in producing valvular lesions of the heart. That can only be determined by a detailed examination of the etiological factors in the different cardiac disorders. Nor must it be assumed that we consider a statistical inquiry, such as this is, can definitely dispose, in all cases, of the rheumatic nature of tonsillitis, growing pains, and the like. What is described as tonsillitis, for example, may well be only the reaction of the tonsils to a variety of noxious agents. In some cases the agent may be the same organism as that which causes acute rheumatism, but if this only produced

a small minority of the cases described as tonsillitis, they would be "swamped" by the rest, and the association with true rheumatism might not appear. We do assert, however, that our inquiry makes it advisable to be cautious in suggesting a rheumatic origin for any valvular lesion, where a history of "rheumatism," growing pains, or tonsillitis is alone obtained.

Diphtheria.

Of the 10,000 cases, 728 gave a history of diphtheria. While the association between diphtheria and scarlet fever is not directly related to the present inquiry, it may be worth while putting on record the correlation we found between these two diseases, for, though ours is a selected material, the association between diphtheria and scarlet fever on the one hand, and heart disease on the other, is probably not sufficiently intimate to affect materially the results.

A history of both scarlet fever and diphtheria was given by 267 cases, of diphtheria without scarlet fever by 461, a history of scarlet fever without diphtheria by 1,918, and 7,354 gave no history of either disease. This gives a correlation coefficient of 0.27 ± 0.002, χ^2 being 101. This correlation coefficient, though only moderate to small, is distinctly higher than one would, *a priori*, have expected, for it does show some definite correlation between the two histories. It is possibly due to the septic tonsillar infection so frequent in scarlet fever being described as diphtheria. Still, whatever the explanation, it is enough to be worth recording.

Pneumonia.

Of the 10,000 cases, 537 gave a history of pneumonia.

Influenza.

No fewer than 5,629, that is to say, over 56 per cent. of the recruits examined, gave a history of one or more attacks of influenza. Though there is no doubt that this disease is extremely common in England, it may be doubted whether this high figure really represents its prevalence, for it is notorious that at the present time patients delight in dignifying colds and other slight ailments by the more sonorous title of influenza.

Syphilis.

Since the 10,000 cases examined were selected because they presented a doubt as to their cardiac condition, and the presence or absence of a history of venereal disease was not taken into consideration in making this selection, they may be regarded, from the point of view of incidence of syphilis, as a random sample of the male population of London between the ages of 18 and 41, provided that syphilis was not a material cause in producing those cardiac symptoms which determined their selection. We shall hope to show later that the importance of syphilis as a cause of cardiac derangement was minimal in the cases with which we are concerned, and, since practically all the cases examined were engaged in their ordinary avocations, and very few could be regarded as invalids, there is no reason for supposing that the incidence of syphilis would be less in the cases considered than among the general population from which they were drawn.

Unfortunately, on account of the time involved, it was not possible to make a determination of the Wassermann reaction part of the routine of the examination. Consequently, we are dependent chiefly on the recruits' statements in determining a syphilitic history; but, from the very circumstances of the examinations, these histories are far more likely to be truthful than those usually obtained. The atmosphere in which they were conducted was official; each man was privately catechized, and knew that it was highly improbable that he would ever see the examiner again, or that there would be any opportunity of his secret being betrayed to his friends or relations, while there was the ill-defined fear of punishment if an untruthful statement were made in what was, in essence, an inquiry by the State. Further, as the great bulk of the men were conscripts, it was found that a not inconsiderable proportion were only too ready to state any fact which they thought would militate against their acceptance for full military service. We are therefore of opinion that the wilful concealment of a syphilitic history has, in these cases, been reduced to a minimum. Of course a man may have contracted specific disease without being aware of the fact, but such cases must, in all probability, constitute but a small proportion of the whole. Where there was a doubt as to whether the history given was that of true specific disease or not, the cases were usually recorded as syphilitic so as to avoid under-estimating the incidence of the disease and with a view to neutralizing to some extent any instances of wilful concealment. Probably, therefore, the incidence of syphilis on these 10,000 cases does fairly represent the incidence of the disease on the corresponding classes in the population of London.

It was found that 200, or exactly 2 per cent., of the 10,000 cases gave a syphilitic history. On account of the difficulty in obtaining any reliable and unbiassed estimate of this nature, these figures are valuable for other purposes than that of determining the relation of specific disease to cardiac conditions, for which they were primarily worked out.

Gonorrhoea.

The remarks which have been made under the heading of syphilis apply in a great measure to gonorrhoea as well, and the incidence of this disease on the 10,000 recruits may probably be fairly taken as representing the incidence on the male population of London between the ages of 18 and 41. An analysis of the records showed that 596, or 5.96 per cent. of the 10,000 recruits, gave a history of gonorrhoea. The fact that among these men three times as many had suffered from this ailment as those who had been affected by syphilis is about in accordance with common experience as to the relative frequency of the two diseases. These numbers are interesting as putting on record the frequency with which the two affections occur in a large body of men in civil life, and may form a useful standard of comparison with comparable figures for men after various periods of service with the colours.

Strain.

The classification already given into occupations gives some idea of the amount of muscular work the different classes of men concerned habitually undertake. While it has in many cases been distinctly difficult to decide whether any particular vocation should be placed at the top of the light work category or at the bottom of the medium, or whether a trade properly belongs to the medium or heavy group, still, on the whole, we believe that the arrangement adopted is sufficiently accurate for the purpose we have in view, and that, on account of the large numbers involved, such errors as we may have made will tend to neutralize one another.

In estimating the amount of muscular work any individual performs, we ought not to confine ourselves to his occupation alone but should consider also how he employs his leisure. A clerk in a Government office, who has short office hours and devotes an ample leisure to various heavy athletic amusements such as football and boxing, would, from the point of view of muscular work, be better classified with the carpenter or gardener, or even with the blacksmith, than with the desk clerk in a shop, who has long hours and who very likely indulges in no form of athleticism. In discussing the effect of muscular work upon the circulatory system the total number of foot-pounds done per diem is not the only factor of importance. The blacksmith who has been gradually trained to his work from youth may well undertake with ease an amount of physical exertion which would break the city clerk, whose total active daily exercise is not infrequently confined to a short walk from his dwelling to the train, from the train to his office, and back again in the evening. We should distinguish clearly between the effect of a large total amount of work on a heart which has been gradually accustomed to bear the load on the one hand, and the effect of sudden strain on the other.

If a clerk who during the week confines himself to his walk to and from the station, on Sunday undertakes long bicycle rides in competition with more athletic people than himself, he may well expose his heart to a greater strain than the blacksmith does in his more strenuous occupation. We may regard the amount of strain on the heart produced by any particular piece of muscular work as bearing some sort of proportion to the ratio which this work bears to the work habitually done by the person in question. The blacksmith, who is accustomed to put out regularly many thousands of foot-pounds per hour, is not likely to have his heart strained by running, in 30 seconds, up an

incline rising 30 feet vertically; but the clerk, whose hourly muscular work is measured in hundreds rather than in thousands of foot-pounds, might very well manifest symptoms of distress if forced to take the same run.

We therefore propose to use the word "strain" as a convenient term for the risk to which a man is exposed who does muscular work considerably in excess of that to which he is habituated, and to use the word "strenuous" for habitual heavy labour. In this sense, all the heavy occupations in our list involve strenuous work and in most cases there is also the liability to strain. The railway goods porter, for example, is habitually accustomed to strenuous work, but at any time the moving of an unexpectedly heavy load or the slipping of some weighty piece of goods which he is handling may expose him to strain. While we have endeavoured to ensure that all men whose occupations are strenuous in the sense defined above are classified in the heavy labour groups, it is obvious that many of the cases exposed to strain are necessarily placed in the medium, light, and sedentary occupations groups. Since, in every case, the habits of the recruit with regard to exercise were inquired into, the records have enabled us to form some sort of an estimate regarding the exposure to strain, and a careful inspection of the individual records induces us to believe that out of the 10,000 recruits examined, 2,711, that is to say 27.1 per cent., were subject to strain as defined above, either in their work or in their amusements.

With a view to representing our results in as concrete a form as possible, we append tables of the percentages and correlation figures we have found for our 10,000 cases.

Percentages.

History of rheumatic fever..	19.2	History of diphtheria ...	7.2
,, chorea	2.6	,, pneumonia ...	5.3
,, "rheumatism"	16.1	,, influenza	56.0
,, growing pains ...	26.5	,, syphilis	2.0
,, tonsillitis... ...	22.1	,, gonorrhoea ...	5.95
,, scarlet fever ...	21.8	,, strain	27.1

Correlation Figures.

Correlation between History of	Coefficient.	χ^2.	Degree of Correlation.
Rheumatic fever and chorea ...	0.31 ± 0.02	63.0	Moderate.
Rheumatic fever and "rheumatism"	0.08 ± 0.02	9.2	Negligible.
Rheumatic fever and growing pains	0.06 ± 0.02	9.7	,,
Rheumatic fever and tonsillitis	0.13 ± 0.02	38.0	Low.
Rheumatic fever and scarlet fever	0.08 ± 0.02		Negligible.
Scarlet fever and diphtheria ...	0.27 ± 0.002	101.0	Moderate to low.

THE REACTIVITY OF THE BLOOD

IN RELATION TO CARDIAC BREATHLESSNESS, SURGICAL SHOCK, AND ALLIED CONDITIONS OF THE NERVOUS AND CIRCULATORY SYSTEMS.

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THE plasma of the blood possesses the remarkable property of being able to neutralize large amounts of either acid or alkali without itself being or becoming markedly acid or alkaline. This property ensures the immediate neutralization of acidic or alkaline metabolites thrown into the blood stream as the result of physiological or pathological processes. Without this protection the life of the human race and all the higher animals and plants as at present constituted would be impossible, for it has been shown by the researches of Moore, Roaf, and Whitley[1] that the strip of variation in acidity or alkalinity within which life is possible is a very narrow one, and that it suffices to render the medium within which living cells are situate acid or alkaline to the feeble limit of one-thousandth normal, or less, in order to destroy all life.

It will suffice to give a few illustrations of the importance of small variations in this property of balanced alkalinity and acidity (or hydrogen ion concentration, as it is termed in the language of physical chemistry) in order to prove the necessity of a clear understanding of the problem by physiologists and clinicians alike, and, since the recent communication of Professor Bayliss[2] clearly demonstrates that there is not agreement either as to facts or interpretations regarding the cause or mode of operation of this protective influence, some service may be rendered by a discussion of the question and a reply to his criticisms.

When Haldane and Priestley[3] discovered that the respiratory centre was most delicately balanced in relationship to the concentration of carbon dioxide in the blood, it was sought to correlate the increased respiratory activity after muscular exercise with the production of lactic acid and other organic acids by the muscles, and much research was expended on the determination of lactic acid in blood and urine. At an early discussion of the subject at a meeting of the Physiological Society the present writer suggested that the increased acidity or hydrogen ion concentration of the plasma due to increased dissolved carbonic acid was quite sufficient to form an adequate stimulus to the respiratory centre without any invocation of lactic acid or other organic acid. After some years of vain searching for increase in lactic acid or other partially oxidized metabolites, it has now been proved by the labours of Barcroft, Peters,[4] and others that this is the correct explanation of the regulation of respiratory activity.

An interesting corollary to this physiological discovery is the recent clinical one by Lewis, Cotton, Barcroft, Milroy, Dufton, and Parsons[5] that breathlessness in soldiers suffering from irritable heart is accompanied by a condition of acidosis of the blood. It has been shown by these observers that the blood plasma of such patients possesses less protective power against carbonic acid, or other acid, than that of normal individuals, for the addition of acid causes a quite disproportionate rise in hydrogen ion concentration—that is to say, in that acidic property which stimulates the respiratory centre. Accordingly such patients become breathless on much less exertion than ordinary individuals because they are deficient in alkaline reserve with which to combine the carbonic acid set free by the muscles. As will be pointed out later, this acidic condition of the blood is communicated to all the nerve and muscle cells, voluntary and involuntary, bathed by the altered plasma, and a pathological condition is induced in these, so that their irritability is increased like that of the nerve cells of the respiratory centre. At a deeper stage the increased excitability passes into shock accompanied by physico-chemical changes in the proteins of plasma and cell protoplasm, which will presently be described.

Another interesting development of the problem is that different varieties of shock to the system, such as haemorrhage, surgical operation, infection of wounds, and gassing by irritant gases, are accompanied by acidosis or deficiency of alkali reserve, and when once this vicious condition has been established it gives rise to physico-chemical alterations in plasma and cell protoplasm which tend to retain the circulatory system in a relaxed condition, and this relaxed condition in turn keeps up the acidosis through the stagnation of the circulation. The presence of acidosis in conditions of shock, and its influence in lowering arterial blood pressure was shown by Yandell Henderson[6] and others in America prior to the war, and quite recently has been amply confirmed by Cannon in observations on wounded in casualty clearing stations in France.

A similar drop in the alkali reserve of the plasma following prolonged anaesthesia and operation has been established by many American surgeons, such as Crile and Menten,[7] Austin and Jonas,[8] Morris,[9] and Caldwell and Cleveland.[10] The danger of surgical shock followed by coma and death in diabetes, where there exists high acidosis accompanied by defect of alkali reserve, is known to all surgeons. It has recently been proven by Sir Almroth Wright[11] that there is a marked increase in acidity of the serum in gas gangrene, termed by him "acidaemia," and that the bacillus of this disease flourishes with ease in partially neutralized serum, but is inhibited by serum of normal alkalinity. A similar condition in severe cases of gassing in soldiers and of experimental

gassing in animals has been observed by Barcroft and his co-workers.

In the history of the subject this protective action has received many names, such as "tampon effect," "reactivity of the plasma," "buffer salt effect," "alkali reserve," "acidosis," "acidaemia," "balanced neutrality," "balanced hydrogen ion mixture," "hydrogen ion regulation," and all these are merely attempts at naming and defining the same property.

There is no evidence, either by direct statement or inference, that the French writers, Fernbach and Hubert,[12] who first used the word "tampon," had in mind, as suggested by Professor Bayliss, "a plug of cotton-wool pressed into a wound or elsewhere in order to stop bleeding," and Professor Sörensen of Copenhagen probably transmitted their meaning quite correctly when he used it in the meaning of a buffer, and translated it into German as "puffer."

This paper by the French authors is a short one of a little over two pages in the *Comptes rendus de l'Académie des Sciences*. It deals almost entirely with the protection of proteolytic enzymes by alkaline phosphates from destruction by acidity developed by their own action. The only reference to blood serum is in a single sentence, in which it is mentioned with other physiological fluids, as probably being protected by alkaline phosphates; there is not a single titration or mention of hydrogen ion concentration throughout the entire paper, no protective action of sodium bicarbonate or proteins is even hinted at, and there is certainly no exposition of the manner in which balanced neutrality is maintained.

As this is the only paper which can claim priority of description of the protective action of the blood plasma over those issued from the Liverpool School of Biochemistry in 1905 and 1906, lest it should be thought that a biassed opinion is here being given of its importance, a statement may be quoted from a paper recently issued in the official publication of the Copenhagen school from Professor Sörensen's own laboratory. This paper, by J. Hempel,[13] is written in English, and states: "The term 'buffer' ('tampon') was first introduced by Fernbach and Hubert to meet a special case; as already mentioned, however, it is in the works of S. P. L. Sörensen and Henderson that the great importance of such buffer mixtures for the organism was first thoroughly dealt with."

Now the first paper by Sörensen on this subject which a careful study of the literature has revealed appears in vol. viii of the above-cited publication in 1909, and his extensive monograph in German in *Ergebnisse der Physiologie* (Bd. xii, 1912). The two earliest papers by Henderson[14] and his co-workers (1906 and 1907) deal almost entirely with equilibria in mixtures of alkaline and acid phosphates, which are practically non-existent, as admitted by Bayliss, in blood plasma. On the other hand, the first papers from the Liverpool School by Moore, Roaf, Whitley, Alexander, and Kelly[15] contained (1905) a full account of the balanced neutrality of hydrogen and hydroxyl ions, both in blood plasma and in the case of living organisms developing in sea water, gave a lengthy description in the language of physical chemistry and ionic dissociation of how the equilibrium of hydrogen ions was maintained, and how this protected the marine organism or higher animal from poisoning by acid or alkali. The effects of alteration in the balance of acid and alkali in causing pathological variations in growth and cell division were also given in this first paper.

In a second paper by Moore and Wilson[16] (1906), in vol. i of the *Bio-chemical Journal*, then first appearing from the Liverpool Laboratory, a clinical method was given for estimating the value quantitatively of the protective action by titrating from one given point of hydrogen ion concentration to another, these being marked by the turning points of colour of two selected colour indicators. In a long series of papers published in the earlier volumes of the same journal these researches were extended, and the effects of acid and alkali and neutral salts upon the physico-chemical properties of the serum proteins and other colloids were studied.

In giving this brief summary of the history of the subject the writer has no intention of belittling the magnificent work of the Carlsberg school under the leadership of Sörénsen, which has in the colorimetric method of measuring the hydrogen ion concentration of physiological solutions provided such a rapid and powerful engine of research, nor that of the Harvard school under L. J. Henderson, which has supplied so many exact studies of this important property. I give the credit due for pioneers' share in the work to many colleagues in earlier days at the Liverpool school; the main findings for which priority is claimed may be briefly enumerated, especially since some of them even now are unknown in the current literature of the subject.

1. It was shown that the physiological life of organisms and their normal development was only possible when the reaction of the nutrient fluid lay close to the neutral point, more than traces of alkali or acid beyond the neutralization points of the amphoteric salts and proteins sufficing to destroy life.
2. A disturbance of the balance towards the alkaline point, short of lethal doses, excited living cells to enhanced activity, and caused irregular growth and pathological cell divisions.
3. A clinical method was introduced for titrating the whole serum, including proteins, between two fixed points of hydrogen ion concentration, and also for titrating the alkaline inorganic salts alone of the serum after destruction of the proteins by incineration. Between these two points the hydrogen ion concentration, or intensity of acidity, varied very slowly, never surpassing about one in two-hundred-thousandths normal of excess of hydrogen or hydroxyl ion concentration, but outside the limits hydrogen or hydroxyl ion concentration arose very rapidly. The whole serum showed an amphoteric range of 0.15 normal, while the salts alone, without the proteins, showed a range of only 0.03 normal, thus indicating that the proteins are about five-fold as powerful as the bicarbonates and phosphates present in regulating reaction or hydrogen ion concentration.
4. The molecular concentration of 0.15 normal, which indicates the power of the proteins for combining with acid or alkali is equal to the molecular concentration of the serum for all the inorganic salts of the serum. This indicates that the delicate salt regulation of the plasma, a physiological process seen from the teleostean fishes up to mammalia, is based upon that amount of salts which satisfies the labile combining power of the proteins, and that any salt completely free, and not held in labile union in the plasma is excreted by the kidneys.
5. The neutralizing power of the serum proteins was tested under pathological conditions, and it was found that there was a definite increase in the alkaline limit in carcinoma, and this was correlated with the reduction in acidity of the gastric secretion.
6. It was found that just at the neutral point the osmotic pressure of the serum proteins fell absolutely to zero, indicating a change in the state of aggregation of the protein approaching to precipitation.

At the time these observations were being published all methods of titration were being flouted by German observers, who were working at electrical methods of measuring hydrogen ion concentrations, and Rudolf Höber[17] goes so far as to describe titrations for acidity or alkalinity as ridiculous nonsense. The writer maintained that hydrogen ion determinations alone gave no complete indication, and that the all-important point was the resistance to disturbance by added alkali or acid of the hydrogen ion concentration of the physiological fluid. This could only be settled by titration values, and accordingly Moore and Wilson titrated between two points—namely, neutrality to phenol-phthalein and neutrality to di-methyl-amino-azo-benzol, and termed the result the "reactivity of the serum." This figure measures the resistance of the serum to acid or alkaline invasion and, throughout the range it measures, the change of hydrogen ion concentration is slow to added acid or alkali, while outside the range the change is very rapid, with accompanying pathological changes in any living cell bathed by the fluid.

Now that these preliminary considerations have cleared the ground, the criticisms made by Professor Bayliss may be considered. A fundamental point of difference arises when he states that "in its behaviour towards acids the plasma reacts precisely like solutions of sodium bicarbonate." The following considerations and a very simple experiment based upon them prove conclusively that this is not the case. The classical analyses of human and other mammalian serums by Carl Schmidt and by Bunge,[18] when calculated out as basic and acidic equivalent weights, yield an excess of base amounting to a 0.04 normal solution in the plasma. Again, the determinations of Moore and Wilson give an alkalinity for the salts of the serum of 0.03 normal, and the recent determinations of Van Slyke and Cullen give very close agreement with this, showing an alkalinity of 0.025 to 0.030 normal. Now let all this be taken as present as sodium bicarbonate in the plasma, and to make a large margin for possible error let the amount be increased to 0.05 normal. Take now a quantity of Ringer's solution containing the equivalent of the neutral salts of the plasma, and add to it a sufficient amount of dry sodium bicarbonate to make it a 0.05 normal

solution of sodium bicarbonate—that is, add 0.42 gram per 100 c.cm. If the view held by Professor Bayliss is correct this solution ought to behave precisely like blood serum, while my contention is that it will behave quite differently to either acids or bases, weak or strong. Let the two solutions—serum and sodium bicarbonate in Ringer's solution—be each titrated (*a*) to standard acid, and (*b*) to standard alkali, with appropriate coloured indicators, or, if it be preferred, let the variations in hydrogen ion concentrations be measured by the hydrogen electrode method after equal successive additions of standard acid and alkali, and it will be found that the sodium bicarbonate solution is at least threefold as sensitive to added acid or alkali as is the serum, so that it would be a correspondingly poor protection to the tissue cells against any invasion by acid or alkali. Both the sodium bicarbonate solution and the serum will be found to give the acid reaction to phenol-phthalein, and the alkaline reaction to methyl orange or methyl red; but if, say, 10 c.cm. of each fluid be taken and titrated first with decinormal acid in presence of methyl orange it will be found that the colour changes sharply in the case of the bicarbonate solution when 5 c.cm. of the standard acid has been added, whereas the change in colour in the serum does not appear until at least 15 c.cm. of standard acid has been added, and then comes exceedingly slowly, so that the mid-point is not reached until about 18 c.cm. has been added. If now the alkaline limits be estimated by titration with decinormal alkali in presence of phenol-phthalein, a similar result will be obtained; a single drop, or at most two drops, of decinormal alkali will give a bright pink in the sodium bicarbonate solution, showing that alkalinity to this indicator has been attained, but no pink will be given by the serum until between 2 and 3 c.cm. of the standard alkali have been added. Surely these results indicate a considerable difference in behaviour between serum and a solution of sodium bicarbonate. Moreover, the results are not due, as Professor Bayliss supposes, to an attack upon the structure of the protein molecule by the strong acid, because the titration backward and forward with acid and alkali can be made as often as desired without any change in the properties of the serum proteins; secondly, the drops of acid or alkali immediately they enter the fluid under titration change their hydrogen and hydroxyl ion concentrations to the level of these in the fluid; that is, indeed, the whole point of the protective action, "tampon effect," or whatever it may be called, otherwise there would be no protection for the cells. If such a change did not occur, the colour indicator would at once react and alter colour, as indeed it does where the drop of standard acid or alkali enters, but the colour disappears again as mixing occurs. There is no point in the titrations as above where the acidity or alkalinity as indicated by hydrogen ion concentration rises above that of a solution of one in one-hundred-thousandth normal free acid or alkali, and this would have no disruptive action on the serum proteins, although much less than this would produce great changes in their physico-chemical aggregation, leading to important consequences which will presently be described.

Finally, similar results would be obtained by the addition of weak organic acids, such as acetic or lactic, only apparently more exaggerated still because of the incomplete hydrogen ionization of these acids which constitutes the difference between so-called weak and strong acids; this would result in the colour being changed more slowly, and the slowing down would be exaggerated in the presence of the amphoteric proteins.

The example cited by Professor Bayliss of the change to acid colour of neutral red in serum on the addition of a little lactic acid does not prove, as he supposes, that the lactic acid is not reacting with the proteins; it only proves that he has brought the reacting system, consisting of serum proteins, sodium bicarbonate, carbonic acid, lactic acid, neutral red, to that point of hydrogen ion concentration at which the coloured indicator swings over to the acid colour. Is this not the whole point of the Friedenthal-Sörensen method of measuring hydrogen ion concentration by means of a series of coloured indicators?

It is not contended that such a high degree of acidosis as that indicated by the colour turning point of methyl orange is compatible with life, but that in the reacting system protein + alkali + carbonic acid there is a marked difference from the system alkali + carbonic acid only, and that the influence of the protein is a profound and vital one, so that life is impossible in its absence. If the presence of protein increases the titration value up to the methyl orange point from three-fold to five-fold, surely in the first part of the range nearer to neutrality the presence of protein capable of combining with either acid or alkali cannot be without effect. In such a complex system alkaline carbonates are not first neutralized to exhaustion and then serum-proteins, but both are neutralized together, and this is demonstrated in a way of practical importance by the change in the osmotic properties of the proteins as neutralization proceeds.

The effects of protein, both of plasma and of corpuscles, in combining with alkali and so protecting against invasion of neutrality, is shown by subjecting whole blood to a vacuum. This older method of determining the blood gases taught many lessons which seem likely to be forgotten in the rush of new methods. Without the addition of any acid, exposure of warm blood to a vacuum removes the whole of the carbon dioxide free and combined. What becomes of the free alkali and alkaline reserve? This is a question of fundamental importance in clinical conditions of acidosis, such as those enumerated earlier in this paper. If the whole of the carbon dioxide be pumped off from blood the denudation of carbonic acid does not even stop at the stage of normal sodium carbonate, it passes right over into the stage of free caustic alkali, unless the alkali set free can find something in the blood to combine with, and if the figures for the amount of sodium bicarbonate given by Van Slyke and Cullen be accepted, there would be an alkalinity due to caustic soda of 0.03 normal, and so a hydrogen ion concentration shown experimentally by about $10^{-12.5}$ instead of, as actually the case, of about 10^{-8}. Of course, free alkali is not formed, the alkali combines with the proteins of the blood which yield the protective action required, and this same protective action is often exerted *in vivo*, especially when a man or animal ascends a mountain height or undertakes aviation at high altitudes. The same effect in lessened degree happens with plasma alone, and a sample of serum left in an evacuated desiccator with an absorbent for carbonic acid will lose the whole of its free and combined carbonic acid eventually, and all the alkali will pass into combination with serum proteins; this is shown by the curves of Van Slyke and Cullen[19] for amounts of combined carbonic acid corresponding to varying concentrations of free carbonic acid. Theoretically this should be the case also with solutions of sodium bicarbonate, but the important work of Buckmaster[20] clearly demonstrates that it would require a geological epoch of time for its consummation.

All this goes to show what an important part proteins, both of corpuscles and plasma, take in the regulation of acidosis, and it is to be feared that neglect of this function and a too great simplification of the problem by attempting to reduce it to one of sodium bicarbonate solutions only is leading the minds of observers away from living conditions and restricting the outlook. It is quite a wrong idea, for example, to suppose that acidosis can be determined by acidifying the blood and determining the amount of carbon dioxide that can be pumped off in a vacuum; such determinations may give absolutely misleading results if the cause of the defect of carbonic acid be not regarded. If a sample of the blood of an aviator at a high altitude be taken and analysed, it will be found that the amount of carbon dioxide in it is much reduced, but the aviator is not suffering from acidosis: he is suffering from just the reverse condition—namely, too much alkali in his blood, which his proteins are being taxed to accommodate, and this vicious condition is being increased by the excessive respiration caused by diminished oxygen pressure. Under such conditions increase of carbon dioxide in the diluted air does not lead to hyperpnoea, for animals (rabbits) have been kept by Edie and Moore in air diluted to an oxygen content of 5 per cent. for over forty hours, a dilution at which in the open air life would be impossible, and these animals breathed quite quietly, showing no other evil effects than drowsiness.

It follows that carbon dioxide pumped off from acidified serum need not previously have been present as sodium bicarbonate; indeed, sodium bicarbonate added to a protein solution no longer exists as simple bicarbonate, but only as a factor in a complex mixture and modified by the balance in that mixture.

The next point criticized is the statement that there exists a union between the serum proteins and the neutral salts, and that the salt content is regulated in this manner, and evidence is asked for as to the existence of such compounds between crystalloids and colloids. A full account of the matter will be found in my paper in the Italian *Archivio di fisiologia* (vol. vii, 1909, p. 519); there is only space here to say that the type of union concerned is one of very common occurrence in colloidal chemistry, and especially in bio-chemistry. There is no rupture of atomic linkages, but a combination between molecules with formation of more complex "solution-aggregates." It has been shown by Moore and Roaf that the action of anaesthetics is due to such molecular union. Similar unions take place in the formation of protoplasm and the attachment to it of atomically saturated organic nutrients, in the union of water of crystallization to crystalloids, in complex salt formation, and in the union of single molecules in fifties and sixties, as, for example, in the case of silicic acid or ferric oxide, to form colloids.

It is no evidence against the union of crystalloids with colloids to state that depression of freezing point is unaffected or that the attached electrolytes still conduct. The sodium and chlorine ions of a solution of sodium chloride conduct electricity and the depression of freezing point is doubled by the ionization, but it would surely be an error to state that sodium ions and chlorine ions are therefore not in a condition of chemical union. There is a sufficient degree of freedom of movement of the ions to admit of conduction of electricity, and for each ion to take up independent atomic motion and give rise to osmotic pressure, but the sodium ions and chlorine ions cannot be massively separated without great expenditure of energy and neutralization of ionic charges, and to this extent there is union between sodium ions and chlorine ions. Similar freedom exists between sodium and chlorine ions united to a colloidal complex such as a solution-aggregate of serum-protein, but they are satellites of that solution-aggregate and cannot be separated from it without expenditure of energy.

The evidence for union between colloid and crystalloid in the blood may be briefly enumerated as follows: (1) The colloids are dissolved or precipitated by variations in the concentration of crystalloids in the plasma. It is difficult to conceive how this can occur without interaction. Thus fibrinogen and globulin are precipitated when sodium chloride is dialyzed away and the precipitates redissolve in dilute sodium chloride solution. All the proteins of the plasma are precipitated when the concentration of neutral-salts is increased. (2) The colloids of plasma are most difficultly separable from crystalloids, as has been emphasized by Professor Bayliss[21] himself, who points out that a pure protein entirely free from crystalloid has probably never been prepared. Also, in this process, as separation becomes more complete, the physico-chemical properties of the colloids change, sometimes reversibly, sometimes irreversibly. (3) Selective affinity for crystalloids is exhibited amongst the proteins of the body; for example, the tissue cells and blood corpuscles unite with potassium and phosphatic ions, and the plasma proteins with sodium and chlorine ions. (4) As shown by Moore and Parker,[22] Moore and Roaf,[23] and confirmed by Lillie[24] and others, even small variations in concentration of dissolved crystalloids lead to marked changes in the osmotic pressure of the proteins. Bayliss,[25] in confirming and extending the work of Moore and Roaf on osmotic pressure of solutions of gelatin and of gum acacia, found that presence of sodium chloride decreased the higher pressure obtaining in water solution down to a pressure somewhat lower than that of the serum-proteins, in saline solution isotonic with blood. This change is due to increased aggregation or incipient precipitation following on union of crystalloid and colloid. It is this power of retaining salts in the circulation along with the osmotic pressure still remaining over in presence of the saline which confers on transfused blood, or solutions of gelatin or gum, that advantage which they possess over saline alone as injections for combating shock. Saline alone under shock conditions has no colloid to bind it and is promptly removed from the circulation. The same fate would befall the normal saline of the plasma were it not united to the proteins. (5) Finally, the titration figure of the serum to acid and alkali between the two limits of slow variation in hydrogen ion concentration gives a range of between 0.15 and 0.[illegible] normal; outside this limit the combining powers of the proteins are saturated and ionic concentrations change rapidly. Measurements of depression of freezing point show that the total molecular concentration of the inorganic salts amounts to 0.155 normal. Taking all the evidence together there can be little doubt that this is no chance coincidence, but rather that the inorganic salt content of the plasma is regulated by the combining powers of the proteins, and that renal excretion and thirst are employed to maintain concentration at this level.

In conclusion, attention may be drawn to the observation of Roaf and Adamson[26] that at the neutral point the osmotic pressure of the serum-proteins falls to zero, because of the important effects this must produce in surgical shock and allied conditions. The degree of acidosis experimentally observed in shock often lies at this level which would be produced by the amount of acid added by these observers when they found that the osmotic pressure had dropped to zero.

The amount of acid required to produce zero osmotic pressure in serum cannot be described as strong acid action, the addition was only 0.02 normal, and more caused the pressure to rise again. At this level the plasma can still easily hold 20 to 30 c.cm. per cent. of carbon dioxide, and such amounts are often found in severe acidosis and in shock. The condition of acidosis in the blood has been shown by Van Slyke and Cullen to be reflected on to the tissue cells, as is indeed naturally to be expected. Hence a similar variation in the state of aggregation of protein can be induced in the cells approaching incipient coagulation, and a fall in osmotic properties and change in chemical affinities will accompany this. In this alteration nerve cells, cardiac muscle cells, and the involuntary muscle cells of the blood vessels will all be involved. The chemical alterations in the blood and tissue cells produce a generally relaxed condition.

When it is realized that the reacting system is not a simple one of neutral inorganic salts and sodium bicarbonate only, but one with complex proteins of plasma, tissue cells, pathological products of metabolism, feeble organic acids, and toxins of bacteria, it becomes easier to understand that pathological acidosis is not a simple thing easily produced in a healthy animal by injections of acid, or equally easily combated by injection of sodium bicarbonate. Also, it becomes clearer that different types of acidosis exist, due to different kinds of disturbances of the balance of neutrality, that these types will show different clinical signs, and the disturbing pathological chemical substances can only be removed in different ways. For example, Van Slyke and Cullen injected into a large animal which would possess a calculated blood volume of one litre, no less than 75 c.cm. of normal sulphuric acid, an amount sufficient to neutralize *all* the alkali in the blood of the animal nearly three times over, and yet after forty minutes the alkalinity had only fallen to about half its normal value, and the animal soon showed recovery. Such an experiment by no means copies the conditions of acidosis, from surgical shock, wound infection, or irritative gases, where the whole circulatory and nervous systems are probably vitiated by absorbed organic poisons of acidic nature, and where the blood proteins are not united to an acid such as sulphuric, which can readily be neutralized by ammonia or fixed alkaline bases, so setting free again the proteins in unaltered condition, but to organic acids and toxins of quite different orders of affinity. It is also to be remembered that these toxic substances are continually being produced and that there is a competition between this pathological production on the one hand and oxidation, neutralization, and elimination on the other. If the latter processes do not keep the upper hand, the vitiation of the cells and of the entire circulation and excretory systems which must follow as a consequence will determine the result against the struggling organism.

The realization of the factors involved gives some indications for treatment in addition to alkalization, such as removal of causes of acid production by dieting, rest, and diminution of oxidations by warmth and sleep, removal of blood containing toxins and its replacement preferably by

blood or serum, failing this by injections of gum solutions or salines containing alkali, and stimulation of excretion by all available channels.

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THE TREATMENT OF EPILEPSY BY COLLOSOL PALLADIUM.

BY

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FOR some time I have been using the different collosol preparations in the treatment of furunculosis, seborrhoea, acne rosacea, eczema, etc., and can fully verify the excellent results already stated by Sir Malcolm Morris, Mr. McDonagh, and others, in the BRITISH MEDICAL JOURNAL.

A study of the interpretation of the chemio-therapeutic action of the various collosols led me to believe that, given a suitable collosol, epilepsy should respond to its treatment. Without at the moment entering into my reasons, collosol palladium suggested itself to me as a preparation which should give good results.*

I therefore took twenty-three typical epileptics for systematic treatment and carefully examined the night and day records of their fits for the past four months, during which they had been under my own personal observation. Having, therefore, a sound basis to work upon, I injected each patient intramuscularly with 0.5 c.cm. of "pallamine" at intervals of three days. So far the results have been most marked and encouraging. To cite four cases:

Case 1.—H. G., male, aged 45, suffering from epilepsy of a doubtful traumatic history, had an average of at least four fits weekly. These fits were of a very violent nature, the convulsive stage lasting on occasions for an hour, followed by stupor, confusion, and excitement. Three injections were given as stated above. Since the injections only one fit has occurred in a fortnight, and that of a mild nature, lasting only 30 seconds. The patient feels greatly improved in his general health, is less morose, more conversant, expressing himself more lucidly, and is very grateful for the treatment.

Case 2.—M. A. L., female, aged 53, an epileptic of thirty years' standing, with a fit average of six per week, these being of a very violent nature. Since injection, three weeks ago, no fit has occurred, but she has had a few slight sensations. She is now placid, well behaved, and much better in every way.

Case 3.—M. A., female, aged 16, congenital epilepsy. Her fits at times, owing to their extreme frequency, were uncountable. She seldom had less than three or four a day. Since injection, three weeks ago, only four fits have occurred, of a mild nature, and of short duration.

Case 4.—W. H., female, aged 29, had a fit of a very violent nature at fairly regular intervals of three days. The first injection was given fourteen days ago, and to the time of writing no fit has occurred. She is much brighter, greatly improved in health, and has now great hopes of being discharged from the institution recovered.

It is an interesting fact that in two cases 1 c.cm. of collosol manganese was injected as a stimulant after the injections of "pallamine." In both cases a fit resulted.

Generally most of the patients who have been treated have greatly improved. The nurses and attendants have noticed a marked difference in their general behaviour, a great diminution in the frequency and severity of the fits, and say that their work in the epileptic wards is lightened to a large extent.

The results so far obtained from this treatment have been so encouraging, in fact, have so far exceeded my expectations, that I hasten to bring the matter before the profession in the hope that others will give this form of treatment a trial, and find great benefit to the epileptic ensuing therefrom.

I am still keeping careful records, and hope that at some future date I may be able to show further results.

* Colloid palladium (pallamine) can be purchased from Crookes' Collosols Ltd., 50, Elgin Crescent, W.11.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

THE NIGHTCAP FOR INSOMNIA.

WHILE the treatment of insomnia in any individual case must depend upon a correct estimation of the particular causes in that case, attention to details likely to assist in wooing sleep must always have precedence over drugs.

From this point of view the wearing of a nightcap takes precedence over the drinking of one. Did our grandfathers and grandmothers think, believe, or know from experience that the wearing of a nightcap encouraged sleep? How did this article come into such prevalent use in olden times? We are not entitled to suppose that the older generation wore it from vanity or foolishness, but rather to presume that it had knowledge and experience on its side, and had found that it encouraged sleep thereby.

This view is supported by war-time experience of the knitted Balaclava helmet and knitted cap comforter. That the feet should be warm in bed is recognized as necessary for sound unbroken sleep, but that warmth of the head may be soothing and sleep-winning is not sufficiently recognized at present in civil practice. The war cap comforter is well named. Those who use it at night in cold weather know its soothing virtues in dug-outs, shacks, huts, brick-floored billets, and such similar resting places.

The use and benefit of this accessory might be extended to civilians suffering from insomnia not of gross organic origin. In addition to its soothing sleep-promoting warmth the cap comforter can be used to decrease the intensity of sense impressions from light and sound, encouraging sleep and lessening the chance of its unnecessary interruption, particularly in the early morning.

It is recognized that light and fresh air purify the bedroom atmosphere and make sleep thereby more wholesome and refreshing. A drawn blind, to a large extent, excludes these. The open window, however, admits the full intensity of sounds from outside and daylight tends to waken the sleeper too early. The cap comforter is used to diminish these sensory excitants. The lower part, folded to a treble thickness, is brought over the ears and eyes. The sleeper then has all the benefit of the fresh air and purifying light without the disadvantage of sensory excitation of the eyes and ears. Extraneous sounds are greatly diminished in intensity and darkness is over the eyes. Thus two real objections sometimes raised by a patient to the open, blindless, curtainless bedroom window are removed. For those who know its value the cap comforter is a potent nightcap.

There is another war-time practice prevalent among soldiers for inducing sleep. As, prior to sleeping, the bird puts its head under its wing, and other animals curl up and thereby lessen the respiratory exchange, so, not infrequently, the soldier pulls his blanket completely over his head to facilitate sleep. He thus obtains increased head warmth, diminished sensory excitation, and a narcotic effect from rebreathing his own carbonic acid. While this practice cannot be recommended as giving healthy sleep it does decidedly promote sleep. As would be expected, such sleep is not so refreshing as fresh air sleep, and the man is often slow to waken and in wakening passes through a stupid, confused phase, resembling that of one coming out of a brief anaesthetic state. This practice is most useful where sleep is being prevented by coldness of the body due to wet clothing, wet feet, or insufficiency or wetness of blankets. The heavy sleep gives a welcome escape for the time being from the many abominations of the war zone.

W. J. BURNS SELKIRK, M.A., M.D.

THE SIZE OF THE HEART.

METHODS of determining the size of the heart are just now matters of more than usual importance; and, especially in view of the opinion authoritatively expressed that systolic murmurs may be confidently ignored in absence of symptoms, if the heart be normal in size, it is incumbent upon us to neglect no precaution against making a mistake with regard to size.

Consequently, the astonishing statement rather recently made, that "examination to determine the size of the heart should always be made with the man lying down," is greatly to be regretted. For not only has it been shown over and over again that the exact converse is correct, but every day medical experience makes plain to any one who can percuss and distinguish notes that "*examination to determine the size of the heart should always be made when the patient is erect.*"

How many cases of dilated heart can one not recall in which the width of the cardiac dullness in recumbency was notably less than in the erect position, and much less than the probable width of the heart? I have seen a case in which the recumbent dullness was only 5 in. wide, whilst the standing dullness was 9 in. In such a case is it common sense to suppose that the lesser measurement—not much over normal—more correctly indicated the width of a heart giving all the evidences of serious dilatation? I remember once being sent for to see a boy who had fainted after unusual exertion, and presented, to his doctor's surprise, a perfectly normal heart dullness; the lad had been too ill to allow of his being examined in any position but the recumbent; by the time I arrived he was sufficiently better to be allowed to sit up for a few minutes, and percussion in the sitting posture at once showed the considerable dilatation which, after taking all the circumstances into account, we had both suspected to exist. The diagnostically valuable recumbent reduction of cardiac dullness in many cancer patients is enough alone to dispose of this absurd error. Commonly, the dullness is no larger than a postage stamp. Are we to conclude from such a dullness that the heart also is of that size? Sometimes there is no recumbent dullness at all, although the standing dullness is normal. Are we here to set aside the standing dullness and to assume that the heart has disappeared?

After all, the action of gravity must be supposed to affect the heart as well as the historic apple. True, one medical correspondent has called this in question, reminding me of an equally amusing suggestion by a lady friend, who once said to me, "How curious it is that the human body should be no heavier after a meal!" Moreover, the fact of the effect of gravity is not now merely a matter of inference. A valuable paper by Professor Rudolf of Toronto several years ago contained *x*-ray photographs showing laterally the heart's relation to the anterior chest wall both in the erect and recumbent postures.

In the present instance we can only suppose that a misprint is responsible for a most unfortunate misstatement.

Exeter. W. GORDON, M.D., F.R.C.P.

ALOES AS A LOCAL SEDATIVE.

THAT it has long been known that aloes is a local sedative is shown by the formula for friar's balsam, in which aloes is a considerable ingredient. The balsam was used for bites of all sorts, as well as for other wounds, and still is a good application. I think, however, that a saturated solution of aloes in tincture of tolu is a much pleasanter form. It is, as far as I know, the only thing that relieves the virulent itching of harvest bug bites. It should be kept in a stoppered bottle, and shaken before use by applying the stopper to each bite once or twice *before scratching;* the relief is great. By going over the whole body when stripped for bed a good night is obtained. I speak from experience, both personal and from the reports of patients. The credit for this particular preparation is due to my late father, Frederick Cock, M.D.

May I, in addition, advocate the use of tincture of tolu in bronchitis kettles instead of compound tincture of benzoin? Here, after the aromatic portion has volatilized, the peculiarly disagreeable odour of aloes persists, whereas the tolu remains pleasant all the time, and is at least as soothing and antiseptic as the friar's balsam.

London, W. F. WILLIAM COCK, M.D.

Reviews.

TREATMENT OF LOCOMOTOR ATAXY.

SINCE he first began to write on the subject in 190[illegible] Dr. E. LEREDDE has constantly advanced the argument that tabes dorsalis is a curable disease if given the proper form of treatment; everything, he says, depends on the technique of the treatment adopted. The disease is a manifestation of syphilitic infection, and is, he contends, the result, from the point of view of pathological anatomy, of a syphilitic posterior meningomyelitis. In some cases, but not all, the disease can be cured by vigorous mercurial treatment. But arsenobenzene is a far better drug to employ, and Dr. Leredde confines himself to its use. The sooner the treatment is begun, once the diagnosis is made, the better; the doses of arsenobenzene are small at first, and are increased later in accordance with the patient's tolerance of the drug. The object is to avoid, as far as possible, Herxheimer reactions, or thermal local and general reactions attributed to the destruction of the specific spirochaetes by the antisyphilitic drug employed.

Since 1910 Dr. Leredde has treated 87 tabetics, of whom 37 had had the disease for from ten to twenty-six years when they first came under his care; these may be fairly regarded as difficult cases, being so inveterate. In a large and fully documented volume[1] he gives a full account of his methods and results, emphasizing the importance of prolonged treatment with perhaps forty or fifty injections of 606 or 914. In disagreement with Fournier, he holds that syphilis is an infection that does not become attenuated as the years go by; he believes that a clinical cure of tabes may be obtained by thorough treatment, but holds an absolute cure to be impossible. Of the 87 patients he reports on, 29 received from three to ten intravenous injections of arsenobenzene, 28 from eleven to twenty injections, 18 from twenty to thirty injections, and the remaining 12 from thirty-one to seventy three injections apiece. Intrathecal injections of arsenobenzene or of arsenobenzenized serum he condemns out of hand. He gives the drug himself in separate series of from four to seven injections, each at intervals of a week or fortnight, with a month or more between each series. To judge by the detailed reports of his cases, the treatment gives good results.

OTOSCLEROSIS.

DR. ALBERT GRAY'S reputation as an expounder of otology as well as an investigator in its realms, is well maintained by his treatise on *Otosclerosis*.[2] This disease has always been the opprobrium of this branch of the medical art from the time when it was described by the self-contradictory name of "dry catarrh" of the middle ear, and it will probably remain so for long under the term of "otosclerosis," though Dr. Gray, who designates it "idiopathic degenerative deafness," carries us a step further and reviews the treatment of the affection in a wider manner than any single author. The predisposing factors, without which the exciting causes fail of effect, receive patient consideration, and among them heredity is assigned a very prominent place. Several family trees are reproduced so far as they bear upon idiopathic degenerative deafness. The exciting causes lead to its development only in those subjects in whom a predisposition—*the* predisposition—is present. Among these exciting causes Dr. Albert Gray gives a prominent place to suppurative inflammation of the middle ear, and he seems certainly to have proved his point by bold reference to the book of nature. In point of fact his morbid anatomical sections show the association quite unmistakably, and the causal nature of the association seems unquestionable. The characteristic lesion of "otosclerosis" is present along with those of suppurative inflammation, but is quite distinguishable from them. The line of demarcation between the degenerative area of otosclerosis and the surrounding bone, whether otherwise diseased or healthy, is most pronounced, and equally so is the absence of the microscopical feature

[1] *Traitement du tabes (Méningomyélite syphilitique postérieure).* By E. Leredde. Paris: A. Maloine et Fils. 1918. (Roy. 8vo, pp. [illegible] Fr. 14.)

[2] *Otosclerosis (Idiopathic Degenerative Deafness).* By Albert A. Gray, M.D., F.R.S.E. London: H. K. Lewis and Co., Ltd. [illegible] (Pp. 197; 20 illustrations. 12s. 6d.)

characteristic of inflammation as such. A large portion of the book is occupied by reproductions of "untouched" photographs of microscopical sections of "otosclerotic" temporal bones prepared by Dr. Gray himself. It is with a glow of national pride that we survey the great work of Dr. Albert Gray, which entitles him to a foremost place among the scientific investigators of the world, and justifies still more fully the international honour which has been bestowed on him. He shows himself at the same time a practical healer of the sick, and discusses the treatment with all the human feelings of "an ordinary doctor," setting out in a clear and concise way, but in ample detail, the principles of the treatment he has found to have a satisfactory effect, that is to say, a somewhat more satisfactory effect than had previously been observed. The principles are simple and the details are well worthy of the consideration of those who, as specialists or as general practitioners, have the thankless task of dealing with this obstinate affection. As the result of careful trial and observation he makes short work of some much-vaunted methods. All practitioners ought to read this book, and we say deliberately that no aural specialist can afford to leave it unstudied.

THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

As a result of observations at the Southwark Tuberculosis Dispensary and at Brompton Hospital, Dr. JAMES T. MACMANUS has set forth in a volume entitled *Modern Methods in the Diagnosis and Treatment of Phthisis*,[3] certain conclusions at which he has arrived, more especially with respect to the action and therapeutic value of tuberculin. Incidentally he has collated the opinions of many other writers on the subject. These are by no means unanimous, but rather serve to strengthen the opinion that the use of tuberculin in any given case must be regarded as experimental and that no uniformity of action can be looked for so long as the influence of other septic organisms remains unknown. Only a rough classification is possible, and that does not always correspond to the apparent extent of the lesion in the lungs. Illustrative cases are given of the use of tuberculin in very small doses, gradually increased, and these cases are more than usually convincing from the fact that for the most part the patients were working men who did not vary their ordinary round of life during the continuance of the treatment. It must, however, be assumed that advice as to fresh air and precautionary measures was given and observed in each case; the dose inoculated was insufficient to produce any reaction, in most cases. Altogether, the writer is able to commend the use of tuberculin (with many reservations) as a valuable adjunct to ordinary treatment, but only in selected cases. Of the diagnostic importance of *x* rays he speaks with reserve. It was long ago demonstrated that tubercle throws no shadow until it has attained a considerable degree of density, and by that time its presence is usually to be detected in other ways. The early impairment of pulmonary movement and the varying degree in which the affected apex may become translucent on inspiration are of some value in doubtful cases. A bibliography of works referred to in the text will be found to cover most of the work that has been published on the subject of late years.

AN ITALIAN-ENGLISH DICTIONARY.

BRITISH readers of Italian literature, whether medical or other, are under a heavy debt of gratitude to Mr. ALFRED HOARE for his quarto Italian-English dictionary published three years ago at the price of two guineas. It is not too much to say that this is by far the best book of its sort ever published; before its appearance the anxious reader of Italian literature could only refer to dictionaries that were either mere catalogues of words or books compiled by authors unfitted by temperament or training for the highly skilled work of the lexicographer. Mr. Hoare's quarto dictionary, for all its size, is a model of compression; and in an extensive reading of Italian medical literature it has hardly ever been found wanting—even in the matter of words appearing to belong to dialects of the Italian tongue such as are met with in certain Southern Italian medical periodicals. An abridged form of the quarto volume has now been brought out by Mr. Hoare under the title *A Short Italian Dictionary*,[4] and, so far as a brief acquaintance with its merits affords opportunity for judgement, this also appears to be a first-rate dictionary. It is not particularly designed for the use of readers of medical and surgical literature, but appears to be adequate for the use of those unable to afford the larger work. We recommend it strongly to the attention of those who require a trustworthy and up-to-date Italian-English dictionary, and are unable to employ Mr. Hoare's quarto volume.

[3] *Modern Methods in the Diagnosis and Treatment of Phthisis. With Special Reference to Tuberculin.* By James T. MacManus, M.B., B.Ch., B.A.O.(N.U.I.), D.P.H.Oxford. London: John Bale, Sons, and Danielsson. 1918. (Demy 8vo, pp. 64. 2s. 6d. net.)

NOTES ON BOOKS.

DR. W. H. THOMSON'S *Treatise on Clinical Medicine*[5] is a handsome volume giving a somewhat perfunctory account of the great subject with which it deals. The author begins his book with a chapter on "Catching Cold," a process which exposes any and every part of the body to the entrance of infecting micro-organisms of the most varied kind, and so to disease, through its action on the vasomotor nervous system. "Catching cold" would thus appear to produce a local shutting off of the arterial blood supply in some part of the body; Dr. Thomson adds that the most sensitive part of the body to surface chill is the skin of the forearms. Numerous personal observations of interest will be found throughout the book, which is weakest in such matters as physical signs, pathological anatomy, bacteriological diagnosis, prognosis, and treatment.

That CLARKE'S *Refraction of the Eye*[6] should have reached its fourth edition is sufficient guarantee of its soundness. The subject is dealt with in the usual manner, special prominence being given to eye-strain. No amount of reading will ever make a man a good practical refractionist, but this book can be safely recommended to the student who is beginning his ophthalmological career as one of the very best on its subject in our language. The whole work has been carefully revised, and it is fully up to date; the chapter on spectacles is excellent, and the last chapter contains by far the fullest exposition of the visual requirements of the various services that we remember to have seen. Printing, paper, and binding are alike excellent.

The second edition of Mr. C. T. KINGZETT'S *Chemistry for Beginners*,[7] beginners aged 14 and upwards according to the preface, preserves the agreeable simplicity of the first edition, with some rearrangements and additions. We have also received for review a new part of the work, forerunner of a third edition. This is descriptive of apparatus and experiments, and contains eighty-one illustrations; its contents are arranged in alphabetical order. We hope that these little volumes will be the effective agents in speeding up the commercial production of the British Empire their author has designed them to be.

Professor JOSLIN'S *Diabetic Manual*[8] is a book written for what the author calls the mutual use of doctor and patient. It is arranged in four parts; the first gives an untechnical survey of the whole subject, the second deals with the treatment of severer cases of diabetes, the third with diet tables and recipes, the fourth (and shortest) with chemical tests of service to those in charge of diabetic patients. The book is complete and clearly written; it will be found useful by medical practitioners, and there are many diabetic patients who could be trusted to study it with advantage.

[4] *A Short Italian Dictionary.* By Alfred Hoare, M.A. Vol. i, Italian-English. Abridged from the author's larger dictionary. Cambridge: At the University Press. 1918. (Demy 8vo, pp. xxvi + 443. 9s. net.)

[5] *A Treatise on Clinical Medicine.* By William Hanna Thomson, M.D., LL.D., Physician to the Roosevelt Hospital, etc. Second edition, revised. Philadelphia and London: W. B. Saunders Co. 1918. (Roy. 8vo, pp. 678. 24s. net.)

[6] *The Errors of Accommodation and Refraction of the Eye.* Fourth edition. By Ernest Clarke. London: Baillière, Tindall, and Cox. 1918. (Pp. 243, with 92 illustrations. Price 6s.)

[7] *Chemistry for Beginners and School Boys.* By C. T. Kingzett, F.I.C., F.C.S. London: Baillière, Tindall, and Cox. 1918. (Small Cr. 8vo, pp. 150. 2s. 6d. net.)

[8] *A Diabetic Manual for the Mutual Use of Doctor and Patient.* By Elliott P. Joslin, M.D., Assistant Professor of Medicine, Harvard Medical School, etc. Philadelphia and New York: Lea and Febiger. 1918. (Post 8vo, pp. 187; 16 figures. 1.75 dols.)

MEDICAL EDUCATION IN ENGLAND.

THE OVERLOADED CURRICULUM AND THE INCUBUS OF THE EXAMINATION SYSTEM.

BY

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SIR CLIFFORD ALLBUTT, in the BRITISH MEDICAL JOURNAL of August 3rd (p. 113), gave a general indication of the scope of the memorandum on medical education in England addressed to the President of the Board of Education by Sir George Newman, but the memorandum* contains so much matter and raises so many important questions that it affords material for discussion from many points of view. I propose to deal only with two.

Let me, however, as a preliminary say that the note of hopefulness which pervades this report is distinctly encouraging to those who, after years of endeavour, are inclined to regard the position of medical education in London as irremediable. As the author points out, the last few years have been marked by a growing sense of the importance of medical education to the State, and a growing recognition by public and Parliament of their dependence on the medical profession in all measures affecting the health and social welfare of the community. But hitherto one of the main obstacles to reform of medical education has been the lack of interest, or even the fatuous self-satisfaction in things as they are, displayed by all grades of the profession. Each medical man has been interested only in his patients, and the point of view even of the leaders of the profession has rarely extended beyond the walls of their own medical school. Three-quarters of the medical teachers in London are probably of the opinion that all would be well in medical education if only their particular school could receive larger grants in aid of its educational work.

But in the concentrated activity of the community which is characteristic of the state of war, medical men have learned to regard themselves not merely as purveyors of advice and physic to a limited section of the public, but as integral parts of a great organization for conserving the health and fitness of the community. They have come in contact with conditions which to them were previously unknown, and have learned to expect from science, from organized research, the solution of their difficulties and the provision of means by which to prevent and combat disease. Failure of medical measures in the army is at once translated into incapacity, and appears in its numerical magnitude in the army returns. Both practitioner and consultant have learned to know their ignorance as well as their powers when co-operating in the employment of scientific method for the maintenance of our fighting forces. They will thus be ready for the strenuous times of social development, if not revolution, which must immediately succeed the end of the war.

We may hope that the able commentary on the sick body of medical education in England, which we have here from Sir George Newman, will be read, marked, and digested by the medical profession. If we take its lessons to heart, we may show ourselves as capable of striking out new lines in this important aspect of human activity as we have in the multifarious inventions of war. He rightly points out that medicine has become a quasi-public profession, in the character and equipment of which the State is deeply concerned. Thus medical education is a problem of national concern. This being the case, it will be necessary for medical men to face the problem of a root-and-branch reform of our education system, if such a reform is not to be imposed on them by the State of which they are the servants.

The teachers of medical students are at present confronted by a dilemma, which they are attempting to solve by the use of worn-out machinery invented at a time when medicine was little more than a craft entrusted to a guild jealous of its privileges and its perquisites. The ever-widening scope of knowledge demanded from the medical man in the struggle against disease has brought about an enormous increase in the number of subjects which have to be crowded into the all too short five years' curriculum. On every hand one hears of the overloading of the curriculum, and yet it is impossible to say that any of the subjects which have been introduced are unimportant to the medical man. And withal we do not attain in the qualified practitioner, as turned out from our schools, the broad culture, the acquaintance with scientific principles, and the facility for the acquisition of new ideas which are necessary if he is to play his part in the ever-changing front of medicine.

Sir George Newman points out two fundamental conditions which must be realized before we can hope to adjust medical education to the needs of the present day. In the first place he says, "It is clear that the Commonwealth does not require two standards of medical men, one having received an inferior form of training and the other a superior form. All medical education should be fundamentally one and the same in regard to basis, technique, and spirit. All practitioners require a minimum of comprehensive training, the same elements of scientific method, a similar scientific inspiration." This can be achieved only by a university education in medicine for every medical man, "and the foundation of such an education is science." The passage which he quotes from Leonardo da Vinci is a word to the leaders of our profession as much as it is to the Army Council. "Those who are enamoured of practice without science are like a pilot who comes into a ship without rudder or compass and never has any certainty where he is going."

The memorandum abstains from entering on the thorny question of university reform, though in London the whole question of medical education is intimately bound up with the provision of a real university or universities. It is to be hoped that the wider outlook gained by all of us through these years of war will enable us to avoid repeating the mistake of trying to confine all the university activities of London within the meshes of a monstrous machine, which would continue to have the same paralysing influence on higher education as it has had during the last fifty years, and would perpetuate in this country the conditions brought about in France by the establishment of the "University of France," conditions from which the French universities were only just beginning to recover before the war. Greater London with its ten million inhabitants could and should support half a dozen universities. While our university institutions continue to be bound to the examining body which has been called the London University for so long, the progress of medicine and of medical education must remain suspended; for it is the examination system which has been the curse of medicine, as of all higher education in this country, destructive to the university spirit, stunting to the development of the student, and a dreary prison house to the teacher. Sir George Newman points out that many of the difficulties and shortcomings of the past have been due "partly to an attempt to turn out merely an adept technician, and partly to overloading the professional curriculum in regard to information to be acquired to the detriment of real training in science and the scientific spirit; yet it is this and not an encyclopaedic store of information which is a desideratum."

The whole examination system is at variance with the spirit of university teaching; the latter has as its object the enlargement of the mental content of the individual, the broadening of his point of view, the training of his power to deal with new situations, and his familiarization with the avenues of knowledge. An examination tests merely the student's power of acquisition; it determines whether he can retain for a few weeks or months a certain number of facts. It is a training and preparation not for the physician but for the advocate, who has in a few days to get up the salient features of a case, laying stress not on the truth, but on such verbal presentment as will appeal to the jury so that he may win the case for his client. Thereafter he dismisses all he has learnt, if such can be called learning, from his mind. How many men could present themselves for an examination with any chance of success six months after they had passed it?

But it is not the forgetting of what they have known that matters, it is that, during their time of preparation, they have stifled, perforce, their spirit of curiosity, in order to confine their whole attention to such facts as can be verbally presented in an examination. The proper

* *Some Notes on Medical Education in England.* A memorandum addressed to the President of the Board by Sir George Newman, K.C.B., M.D., F.R.C.P., Chief Medical Officer, and a Principal Assistant Secretary of the Board of Education, and Medical Assessor of the Universities Branch of the Board. H.M. Stationery Office. 1918. (8vo, pp. 129. To be obtained through any bookseller. Price 9d.)

training for an examination, as ordinarily conducted, is not a university course but a cramming class. Every teacher at present must feel that he is not giving what his student is desirous of receiving. The student has to pass an examination before proceeding with his career. The good teacher, instead of training him for this particular type of hurdle race, endeavours to give him some of the spirit of the subject and to lay a foundation for the student's future work. Thus, the teacher gives at the same time too much and too little. The curriculum is overloaded and yet not full enough for the training of the medical man. The evil is intensified by the fact that almost all the examinations are conducted in part or in whole by men who have had nothing to do with the training of the student. Thus the teacher has a divided aim: not only must he prepare the student as seems to him best for the aims that he has in view, but he must take care that the student is prepared to face the tests applied by other teachers with different ideals and methods. After quoting Huxley's saying that "examination, like fire, is a good servant but a bad master," the author of the memorandum proceeds: "In medicine at the present time it cannot be said that examinations are subsidiary, or that they do not injure education. Their influence is omnipresent, and not seldom dominant; and in many cases they prescribe, restrict, and even nullify the course of education, bringing in their train all the pernicious influences and evils of the cramming system." While he accepts the need of some test for efficiency, he claims that such a test, "instead of being momentary, unequal and hazardous, should be prolonged, equitable, and relatively certain in its application; a test comprising as its chief factor the whole training and record of the student throughout his course, the form and content of the curriculum, the work done, the hospital cases clerked and dressed, the practical examinations of the class, and so forth." He concludes that such a reform in examination depends on a new spirit in teaching. But how if every new spirit in teaching is smothered at its birth by the prevailing system of examination and tests? Especially is the malign effect of examinations felt in the case of the preliminary and intermediate subjects of the medical curriculum. We do not want the medical man or student entering the wards to have at the tip of his tongue the properties and atomic weights of all the elements, or to be prepared to give a historical account of the views concerning the origin of the heart beat. We do want, however, that the student shall have dipped so deeply into the sciences of chemistry and physiology that he has become imbued with the scientific spirit, and that he knows where to turn to refresh his knowledge on any matter germane to the problems which concern him in the wards.

And here is the only use of examinations—namely, as a means of testing the progress of his student, when conducted by the teacher during his course. The examination system should therefore be continuous—part and parcel of the education, and not its soulless despot. The relegation to the teacher himself of the testing of the fitness of the student to pass to his subsequent studies would not only lighten the burden of the student, but would enable the curriculum to be broadened and extended as required by the continual advance of medical science.

But this question brings us back once more to the provision of university teaching for medical students. While the scientific teachers are the servants of associations of practising physicians and surgeons, whose professional success depends upon the number of students they can attract to their schools, it is hardly possible to entrust the testing of the student to his own teacher. This is only possible when the teacher is part of a learned corporation, of a university whose sole object is the advancement and diffusion of learning, and whose credit depends upon the quality of the men it turns out into the world. No doubt the State will always require some external test to be imposed before it allows the student to undertake the practice of medicine, but this test should be confined to the minimum requirements for the safety of the public, and would properly be held by bodies of practising physicians and surgeons similar to those who at present conduct the final examinations.

It really does not matter whether the State assumes the direct responsibility for such a qualifying examination, or delegates it to the various associations of practitioners which are in existence in different parts of the country. The universities would achieve freedom by relinquishing their licensing powers. They would be able to develop their training in the directions best qualified to bring out the mental powers of their students and to advance the science of medicine, without having their activities continually frustrated by the necessity of conforming to the regulations of an external qualifying authority and their spirit mutilated in the procrustean bed of the present examination system.

I have only touched upon two points in Sir George Newman's report. There is, however, hardly a page which does not furnish food for reflection and which does not present many texts for commentary. Thus he discusses with much fairness and acumen the question of whole-time professors for medicine, the part which preliminary science should play in the training of the medical student, and the relation between physiology and clinical medicine. Of especial value is his masterly treatment of the meaning and needs of preventive medicine, and the part which the medical man will be expected to play in relation to the State. If the changes which must follow the war are to be based and guided by an informed medical opinion, no better means to this end can by imagined than a careful study of Sir George Newman's report by all the members of the medical profession.

THE EDUCATION ACT AND THE MEDICAL PROFESSION.

By H. B. BRACKENBURY,

MEMBER OF THE COUNCIL OF THE BRITISH MEDICAL ASSOCIATION; VICE-PRESIDENT OF THE ASSOCIATION OF EDUCATION COMMITTEES.

THE Education Act, 1918, adds to the duties and powers of local education authorities with regard to the health of children and young persons, and thereby in some respects materially affects the interests and the position of members of the profession in this connexion. For the past ten years it has been the duty of every education authority to arrange for the medical inspection of every child attending the public elementary schools, and it has been within the power of such authorities to provide medical and surgical treatment for any such children as were found to need it. In spite of considerable pressure from the Board of Education, the majority of local education authorities have not exercised this power, though a larger number, without themselves arranging for medical treatment, have established services ancillary to medical inspection in the direction of keeping children under observation to see that treatment is obtained and assisting towards it. The new Act extends these medical services for public elementary schools in two ways: In the first place, the provision of medical treatment, instead of being optional, will be compulsory; the power of the authority to provide it is converted into a duty. In the second place, the number of children concerned will be immensely increased. Hitherto a considerable proportion of children have left the elementary school at thirteen or even at twelve years of age. Henceforth no child may leave before the end of the term in which it reaches fourteen years of age; the local authority may require it to continue till fifteen years of age, and may, with the consent of the Board of Education, permit it to remain in the elementary school till an even later age than this. All these children will have to be medically inspected, and provision will have to be made by the education authority for their treatment.

More important even than this in its effect on the profession is the fact that the new Act extends medical inspection and treatment to schools other than elementary, and to children and young persons of a social class and of an age for whom no public provision has hitherto been made. Every local authority for higher education *must* make provision for the medical inspection of pupils in attendance at its secondary schools, at its continuation schools, and at certain other educational institutions, even though they be under private control and management; and *may* arrange for the medical treatment of such pupils at the cost of the education rate. These duties and powers are of a very far-reaching character, inasmuch as all young persons up to sixteen years of age are to be compelled to attend such schools and, after the lapse of seven years from the day on which the clause comes into operation, the age of compulsion is to be raised to eighteen years except in the case of those who have been

under efficient full-time instruction up to the age of sixteen. Even now, of course, many persons between sixteen and eighteen years of age are in attendance at such schools, and will therefore be subject to the medical provisions, and the number may be expected to increase steadily till compulsion is in force. Further, the Act gives local education authorities power to arrange for establishing or aiding nursery schools for children over two and under five years of age, and for attending to the health and physical welfare of children attending these schools.

Thus most children and young persons between two and eighteen years of age, and all those between five and sixteen, are brought within the purview of the school medical services. They must all be medically inspected, and medical treatment may be provided for all of them and must be available for most of them under the auspices of the local education authorities. It is clear that there will have to be a great increase in the number of medical men or women engaged in the work of medical inspection, who are usually whole-time officers; and that the arrangements for giving medical treatment, which in most cases have hitherto been far from satisfactory or adequate, will need to be very carefully considered in the interest both of the public and of the profession.

The conditions laid down by the Act (either directly or by reference to the Education, Administrative Provisions, Act, 1907) under which medical treatment may be provided are three: First, the arrangements must be sanctioned by the Board of Education, who may require authorities to submit complete schemes for their consideration. Before submitting a scheme the authority is required to consult the other education authorities concerned. This is important, for schools and children in a non-county borough or urban district may be subject to the administrative supervision of more than one authority. The authority is required also to give suitable publicity to its proposals, and to consider any representations made by parents or other persons or bodies of persons interested. Secondly, the authority may provide treatment by encouraging or assisting the establishment or continuance of voluntary agencies, and may associate with itself representatives of voluntary associations for the purpose. Thirdly, the authority must not establish a general domiciliary service of treatment by medical practitioners for children and young persons, and must consider how far it can avail itself of the services of private medical practitioners. This last condition was inserted in the Act on the initiative of the British Medical Association; and though its wording is not as strong as the Association desired, taken in conjunction with the other conditions and assuming a continuance of the sympathetic attitude of the medical department of the Board of Education, it should be a valuable protection to some professional interests. The attention of practitioners in every area should be drawn to these conditions, and to the opportunity they offer for making the views and influence of the profession felt.

The medical clauses of the Act are already in force in so far as they confer powers, but not in so far as they impose duties upon local education authorities; that is, authorities may now be allowed to extend their medical services in the directions indicated, but will not be obliged to do so until the Board of Education name an "appointed day" for this purpose. Representations have been made by the Association to the Board that, both with a view to the securing a wider choice of practitioners by authorities for their services and in common fairness to the men who are now doing naval and military work, it is desirable to postpone the appointed day till some reasonable period after the end of the war, and it is probable that this will, in fact, be the course adopted.

There are a few minor points in which the medical profession is affected by the Act. Two of these may be mentioned. The administration of the Employment of Children Act, 1903 (except in the City of London), is transferred from public health authorities to local education authorities. In some areas this had already been done, where possible, by resolutions of the authorities themselves; but some important matters will now come under the consideration of the school medical officer as such, instead of the medical officer of health as such. No change is made by the Act in connexion with mentally defective children, but whereas it was formerly optional for a local education authority to take cognizance of certain classes of physically defective or epileptic children and to provide for their education, it is now made obligatory for them to do so. This, again, will add to the duties of the school medical officer in a large number of areas.

The really immense addition which the Act makes to the medical services administered by authorities which are not primarily concerned with health emphasizes the importance and urgency of the need for unifying all health administration both centrally and locally; and it is interesting to note that the President of the Board of Education himself, in one of his speeches on the bill, expressed the opinion that the medical functions of the Board would ultimately be transferred to a Ministry of Health. The double provision which is being made for the medical treatment of some classes of persons, the possibility of aggravating the confusion and overlapping already too evident in this connexion, the danger of the development of undue specialization to the detriment of the education and practical experience of the general practitioner, and the narrowing of outlook of the manufactured specialist himself or herself, will be more obvious to the members of the medical profession than they can be to others. Herein, in addition to other reasons, lies the necessity for the profession to make its influence felt in the administration of the Act and the need for local administrators to take advantage of the experience and knowledge of the profession. But, though alive to these dangers, there is no doubt that the medical profession welcomes, as warmly as any other section of the community can do, the improvements which the Education Act, 1918, makes it possible to effect in the education and physical welfare, and therefore in the efficiency and happiness, of our people.

SHELL SHOCK AND WAR NEUROSES.

WITH the approval of the D.G., A.M.S., the course of instruction in shell shock and war neuroses will be resumed at the Maudsley Neurological Clearing Hospital, Denmark Hill, S.E.5, on September 20th, at 3 p.m. It will be open to all medical officers of British Navy and Army Services, to officers of the American Medical Service and to civilian practitioners.

The success of the first course, which was attended by twenty officers belonging to the medical services, Imperial and Dominion, and twenty civilian practitioners, has induced the Director-General to permit this systematic course, which will extend over three months, to be given.

SYLLABUS.

Practical Teaching.—Daily instruction and practice in diagnosis and treatment for officers of the medical services. Mornings, 10 a.m. to 12.30 p.m.; afternoons, 2 p.m. to 4 p.m., except Saturdays and Sundays.

Systematic lectures with demonstrations of illustrative cases on Tuesdays and Fridays at 3 p.m.

1. The anatomy, physiology, and pathology of the nervous and muscular systems applied to the diagnosis, prognosis, and treatment of shell shock and war neuroses.
2. The physiological and pathological conditions underlying shock—emotional, commotional, and surgical.
3. The methods of examining cases of functional nervous disorders (hysteria, neurasthenia, and psychoses) and the determination of fitness for military service.
4. The methods of differential diagnosis of organic and functional disease and the combined conditions.
5. The diagnosis of conscious simulation (malingering), unconscious simulation and exaggeration.
6. The general principles of treatment of functional diseases of the nervous system.
7. General aspect of the surgical side of neuro-muscular disabilities.
8. General principles of psychology as applied to war neuroses and shell shock.

The course of lectures will be open to all officers belonging to the British, Colonial, and American medical services, and to civilian practitioners who obtain a letter of introduction from a physician or surgeon attached to a university or hospital medical school.

Applications to be made to Brevet Lieut.-Colonel F. W. Mott, M.D., F.R.S., Maudsley Neurological Clearing Hospital, Denmark Hill, S.E.5, where the course will be held. All applications will be submitted to the D.G., A.M.S. No fees will be charged.

AN Order has been issued by the Local Government Board extending the expression "local authority" contained in the Local Authorities (Food Control) Order (No. 2), 1918, to include the county council of an administrative county.

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SATURDAY, SEPTEMBER 7TH, 1918.

THE FUTURE OF VOLUNTARY HOSPITALS.

IN the general discussion of the proposal for the establishment of a Ministry of Health it is well that the British Hospitals Association should take part. We were glad to publish in our issue of August 24th (p. 192) the principal propositions contained in the pamphlet[1] by Mr. J. Courtney Buchanan, one of the honorary secretaries of that association, issued in preparation for a conference which is to be held on October 18th at St. Thomas's Hospital. The proposition that in any scheme for the communal dealing with the treatment of disease the provision of accommodation in hospitals must form an essential element is so obvious as to need no argument. It is well, too, that the hospital question should be considered before the establishment of out-patient clinics, apart from hospitals, has become general throughout the country. Every one with hospital experience realizes that the out-patient department, as at present constituted in the vast majority of voluntary hospitals, is unsatisfactory, and in the propositions for discussion at the conference called by the Hospitals Association for October 18th the need for reform in this connexion is forcibly suggested. It is very unfortunate that just as the Government took for its model the bad system of "club practice" in framing the medical clauses of the Insurance Act, so the municipal and county authorities, with the approval of the Local Government Board and the Education Office, seem to be basing their schemes for treatment upon the one department in voluntary hospitals which is generally acknowledged to be unsatisfactory and in need of reform. This gradual extension of out-patient departments—in the form of school clinics, baby clinics and treatment centres, where the patients come up week by week in all weathers, often have to wait long hours, and in the end, after a brief interview with a doctor, go away with a bottle of medicine or a pot of ointment—is wrong in principle and unsatisfactory in practice. Apart from special clinics—such as those for the ear, or the eye, or venereal disease, and special departments such as those for *x* ray, light, or electrical treatment—the out-patient department should, on the one hand, be restricted to consultative or teaching work, and on the other should be merely a clearing house in which the patients are sorted and allocated for treatment as in-patients, in special departments, or in their own homes. Such a department can only be satisfactory if it is attached to a hospital staffed mainly by specialists who are in close touch with the doctors practising in the district served by the hospital.

Mr. Courtney Buchanan in his pamphlet gives cogent reasons for the retention of the voluntary hospitals, and expresses the opinion that "lay administration should, as far as possible, be continued and retained"; he does not discuss the effects that would flow from the replacement of the voluntary institutions by State or municipal hospitals, as desired by some theorists who seem to take the near approach of the change for granted. The reputation of a hospital depends upon the reputation of the staff, and experience of municipal administration in medical matters in the past makes it unlikely that the present system of visiting staffs, consisting of men of high standing in the profession, would long remain under municipal management. Further, the lay members of the hospital boards as a rule consist for the most part of men who have devoted years to the study of hospital management, and it will be disastrous if they are replaced by "Health" committees with their ever-changing personnel.

It should be possible to evolve a scheme which would conduce to the maximum of efficiency at the minimum of cost in money and personnel. Such a scheme would provide, first, that all medical institutions in an area should be grouped round or associated with a voluntary general hospital. Secondly, that all patients should be paid for, either by the municipality or county authority, or by the State, or from a fund raised by voluntary subscriptions, the payment to include an honorarium for the medical officer under whose care the patient is placed. The third point would be that the management should be in the hands of a committee consisting of representatives from the various contributing bodies, including representatives of the medical profession; the fourth that the State should be responsible for the establishment and upkeep of research laboratories, and the fifth that money for extensions or rebuilding should be provided equally by the State, the municipality, and from voluntary contributions. Another very important principle is that all voluntary hospitals should be open for the education of students and nurses, either in association with medical schools or for purposes of graduate study. The Ministry of Health should have power to inspect and report upon all institutions of the nature of hospitals.

[1] London: The Scientific Press, Ltd. (Southampton Street, Strand, W.C.2). (6d.)

THE CONTROL OF MALARIA.

THE study of malaria presents us with three great problems—the first is, can malaria be abolished? the second, can it be avoided? and the third, can it be cured? In a memorandum issued in India a few months ago, Colonel (now Major-General) P. Hehir, I.M.S., treated certain aspects of each of these problems. When a critical judgement is to be passed on antimalarial campaigns it is often difficult to decide whether those reckoned successful were so in fact, because the measure of the antecedent malaria in the place is often lacking in precision. Even if the estimate be adequate it will often be impossible, if more than one method was employed, to assign to each its share, if any, in bringing about the successful result. General Hehir states clearly the preliminary observations to be made when an antimalarial campaign is to be undertaken. The most important are, to get accurate measures of the number of cases of malaria and the number of anophelines. Information as to the second is best recorded on a large scale map, on which notes, as complete as possible, are made of all breeding places and of buildings frequented by the adult mosquito. On the first point, the most accurate information is to be obtained from the malarial index—that is to say, the number of persons found by microscopical examination to be infected. Failing this, which must often be a counsel of perfection, General Hehir, like some other practical students of the administrative question, holds that reliable information may be obtained from the spleen index—that is to say, the percentage of children

between 2 and 10 years of age with enlarged spleen due to acute or chronic malarial infection. There is, as is well known, a considerable amount of malaria amongst Indian children; of 3,884 children in various cantonments in the plains examined a few years ago, it was found that during the malaria season there was an average of 60 per cent. with enlarged spleen and of 40 per cent. with malarial parasites in the blood. The conclusion that the children of cantonments are the chief reservoirs of malarial parasites and the source whence a great deal of the malarial infection is spread appears to be justified.

It has been argued that the demand for information as to conditions existing before a campaign is started is scientific pedantry, and that if the result of a campaign is good that is sufficient. This contention will not stand examination either from the theoretical or the practical point of view, for if we can apportion to each of the factors its share in the result we may be in a position in a subsequent campaign to get the same result more economically. It is on record, for example, that campaigns have been conducted against *Myzomyia rossii*, though all the existing evidence shows that this mosquito does not transmit malaria. Again, if the result of a campaign is failure—for not all campaigns are successful—unless we have accurate preliminary information we shall be in the dark as to the cause of the failure; as General Hehir observes, "in intensely malarial areas, in many cases, do all that is reasonably possible and malaria is not mitigated." On the other hand, he gives a list of some ten cantonments that have been "vastly improved by persistent antimalaria sanitation." Unless antimosquito campaigns are conducted as a scientific experiment is conducted we may in the course of a few generations find the subject shrouded in the same bewildering atmosphere of doubt that now surrounds one aspect of our second great problem, which is whether malaria can be avoided by the use of quinine.

A distinction must be drawn between the protection against infection of a non-infected population and the protection against relapses of an already infected population. Whether protection against infection is possible we do not know; that is to say, we do not know whether any dose of quinine will prevent sporozoites establishing themselves in the human host. There is a widespread belief that "five grains a day" is effective in this respect, but it cannot positively be asserted until we have more tangible evidence. In Macedonia the prophylactic value in this sense of quinine in doses of varying magnitude might have been determined by a system of control, some men being given quinine and others none. If all received quinine no conclusion on this head can have been reached.

When we come to the question of protection against relapse in an already infected population we find ourselves in a maze of contradictions. Treadgold, in this JOURNAL, recently tried to thread this almost impenetrable jungle of records. It would be better to begin again and to conduct a fresh inquiry on a scientific basis, instead of trying to sift the grain from the chaff in the literature, "much of which," Treadgold concludes, "is of little value owing to the lack of detail and to the impressions of the writers being uncontrolled by clinical experiment." What we require is the data on which opinions were formed so that we may examine them and see if they are sound.

As to the question of protection against relapse in the case of simple tertian malaria, in this country at least, there is now very clear evidence that relapses can be controlled (not cured) almost absolutely by certain doses of quinine; but whether this applies also in a tropical or sub-tropical climate, where there is frequently the complicating factor of the constant possibility of reinfection, is quite another matter. Under these conditions careful experiments alone can supply the answer. Experience of simple tertian malaria in this country during the war has disclosed the fact that it cannot certainly be cured by any dose of quinine, big or small, given for days, weeks, or months by the mouth, muscle, or vein. Whether this applies to the tropics we would much like to know. Some cases no doubt appear to be cured by quinine, but the same happens without quinine.

In very few records is a distinction made between simple tertian and malignant tertian malaria. The two parasites, as recent work has shown, react very differently towards quinine and this difference alone might explain a difference in prophylactic results. General Hehir speaks of the disuse of quinine for some days in order to make a diagnosis in a negative case. In this country a few days would in simple tertian malaria be quite useless, as when the blood is negative after administration of quinine (which is then omitted) neither asexual nor sexual parasites reappear in the great majority of cases for at least a fortnight (sometimes much longer). Unlike malignant tertian gametes (crescents), simple tertian gametes come and go with the asexual parasites, and the screening of simple tertian malaria cases after an adequate dose of quinine is not a sound policy.

It is stated that a year's residence (without treatment) in a malaria-free hill station eliminates 98 per cent. of infections in native children. We take this to mean that the children showed no signs of malaria, but this is not equivalent to proving them free from infection, for at present we have no means of proving such freedom; the observation is, however, of great interest from its bearing on the question of "spontaneous cure."

If there be any who still cherish the idea that malaria can be abolished by oiling a few pools or by some other facile method they will do well to read General Hehir's memorandum.

RECENT SMALL-POX THROUGHOUT THE WORLD.

IN the comparatively short space of 104 pages Dr. R. Bruce Low has made a remarkable and very valuable contribution to the literature dealing with small-pox. His report to the Local Government Board on *The Incidence of Small-pox throughout the World in Recent Years*[1] presents facts and figures relating to 112 countries and in most instances the information deals with long periods down to recent times. Those who have come to regard small-pox as a thing of the past will be disillusionized by this report. Two considerations render its publication most opportune. One of these is associated with the special danger of an outbreak of small-pox owing to war conditions. The other has reference to our unpreparedness. Dr. Bruce Low describes the devastation caused by small-pox during and after the Franco-German war in 1870, when the disease attacked first the belligerent nations and afterwards the whole of western and northern Europe, producing a death toll of half a million. Small-pox was prevalent in central Europe in 1917 and exists at the present time in Russia and other countries. Dr. Bruce Low sounds a grave note of warning and foresees difficulties and dangers should small-pox of a virulent kind reach this country. He refers to the frequency with which the infection is conveyed by

[1] *The Incidence of Small-pox throughout the World in Recent Years.* By Dr. R. Bruce Low. 1918. H.M. Stationery Office (New Series 118. (2s. net.)

shipping, a danger to which this country is specially exposed. The neglect of vaccination and revaccination in this country is a most serious factor. Many medical officers of health, public vaccinators, sanitary inspectors, and vaccination officers, are, it is stated, on military service, and their places are filled by men less experienced, and, therefore, less likely to deal efficiently and promptly with the beginnings of an epidemic. The report is not without a moral. It is that "security should be obtained by individual action without delay." This shifts the responsibility from the state to the individual, but the preparedness to face an epidemic of small-pox is surely an affair of the state as well as of the individual. The introduction to the report demands and deserves very serious consideration. Antivaccinators have pointed with satisfaction to the fact that small-pox has been prevalent in Germany, but in a supplementary note on the outbreak it is stated, on the authority of Professor Kirchner, that of 1,000 consecutive cases examined to ascertain the age incidence only 150 were under the age of 30 years; 501 of the remaining 850 had attained the age of 60 years. Those attacked were either unvaccinated or had not been revaccinated within ten years. Russian prisoners of war are stated to have conveyed the infection to Germany and Austria. As a work of reference the report, which is succinct and at the same time comprehensive, will serve a useful purpose. The small-pox statistics are brought up to date within the limits of present war conditions, and so far as details are now available. A desirable purpose would doubtless be served if copies of the report were circulated among vaccination committees in all parts of the country.

INTER-ALLIED FOOD CONTROL.

CONFERENCES have been taking place in London between the Food Controllers of France, Italy, America, and Great Britain, with the object of developing the organization of the Inter-Allied Food Council. The cereal crop of 1918 is said to be generally good, although there are complaints in this country that the wheat is not threshing out as well as it looked, and it must be remembered that large tracts of France are either still in enemy occupation or so completely devastated that they will take years to get into full cultivation. A very important step was taken when the three countries combined to appoint a Wheat Executive, with a Wheat Commission sitting in London, which buys in Australia, Canada, America, India, and the Argentine. This measure has done away with the competition of the several countries in neutral markets, and the task has been simplified since America joined the Entente. The message sent by President Wilson through Mr. Hoover, "We are dining at a common table in a common cause," states the position epigrammatically. It is intended to establish, in addition to the Wheat Commission, three others—one for meat and fats, another for oil-yielding grains, and the third for sugar. The Inter-Allied Food Council is acting in complete unison with the American Food Controller and will give attention not only to the purchase and importation of food, but to its distribution. In the allotment of food of various kinds to the several countries it will be guided by the decisions which the Inter-Allied Scientific Food Commission reached at its meeting in London last June, although it is possible that these decisions may need some revision in the light of further experience. The Council is credited with the intention of forming reserves of cereals in America and Europe to guard against bad harvests in the immediate future. The Food Controller in this country has recently issued a new cereal instructions order regulating the use of wheat, rye, barley, and dredge corn for the feeding of animals. Grain fit for human consumption must not be given to animals; grain unfit for human consumption can only be so used under licence, except in the case of small quantities not exceeding 10 cwt. The fact that last year grain unfit for human consumption sometimes commanded a price higher than the regulated price for grain fit for human consumption shows that a good deal of care will be necessary to make the order effective.

CARDIAC HYPERTROPHY IN AVIATORS.

IN the course of a series of *x*-ray examinations Étienne and Lamy[1] have found evidence that hypertrophy of the left ventricle is constantly present in aviators after five months' flying, and that this hypertrophy develops in two phases—the first of rapid growth so that appreciable enlargement occurs in the course of some months, and a second slowly progressive increase, shown by the outline of the left ventricle, which brings the apex close to the nipple line, even in men who have been flying for two or three years. The hypertrophy is proportional to the altitude at which the aviator usually flies, being more marked in those accustomed to an elevation of 15,000 ft. than in those usually flying between 3,000 and 9,000 ft. It would appear to persist, for it was still very noticeable in a man who had left off flying for more than eight months. Dilatation of the right ventricle was only found in one instance, and then in association with hypertrophy quite out of proportion to the elevation at which the aviator had usually flown. For a long time there are no symptoms nor any functional disturbance. The hypertrophy is seen both in those whose previous life was sedentary and in those devoted to athletics, and appears to be a physiological adaptation to the constantly changing conditions during aviation. Thus the systolic blood pressure rises after the aviator reaches an elevation of 7,500 ft., and falls after the flight; the fall may be as much as 20 mm. of mercury when the descent has been from a height of 15,000 or 18,000 ft. The diastolic pressure falls during the flight, and after the flight rises 5 to 10 mm. or more when the descent has been rapid. The cardiac hypertrophy may be due to the rise in the systolic and diastolic pressure, but possibly repeated phases of sudden low pressure may also play a part. In support of this rather unlikely explanation it is stated that experimental rabbits, allowed to live for six months after repeated intravenous injections of the depressor bases of the urine, had enormously hypertrophied hearts, which indeed were much larger than those seen in rabbits injected with adrenalin or the pressor bases of the urine. It is probable that the frequency of the blood pressure changes is more important than the actual rise or fall in causing the cardiac hypertrophy; as Ferry has pointed out, the organism of the aviator when in the air is constantly attempting to maintain a condition of circulatory equilibrium which, however, is always elusively escaping from control.

THE NIGHTCAP.

THE nightcap, once an essential part of the bed equipment of our ancestors, now a relic of the past, has found a champion in Dr. Burns Selkirk, an interesting communication from whom will be found at p. 255. He defends it on the ground of war experience, and suggests that the use of the "cap comforter" might with advantage be extended to civilians suffering from insomnia not of gross organic origin. Men exposed to all the miseries of the troglodyte life which trench warfare involves naturally seek protection against cold; it is not surprising, therefore, that the use of such head-gear has become very general among our troops in France. Dr. Selkirk asks how the nightcap came into such universal use in former days. It may be pointed out that it did not become fashionable, if the word is allowable in connexion with so homely a matter, till the first half of the last century. In *Julius Caesar* Shakespeare indeed speaks of "sweaty nightcaps," but it is the "rabblement" that wears them. Swift, again, mentions the "humbled swain" whose "nightcap border'd round with lace, could give no softness to his face." But

[1] *Bull. Acad. de Méd.*, Paris, 1918, 3e sér., lxxx, 151.

the heroic period of the nightcap was that of Mr. Pickwick. In the classic work in which the story of that philanthropist's expeditions is told it plays a conspicuous part, notably in the bedroom scene at the Great White Horse, Ipswich, when Mr. Pickwick had his compromising adventure with the middle-aged spinster in yellow curl papers. From the poor man's desperate attempts at explanation it may be gathered that it was considered improper for a man to be seen by a lady in a nightcap. But, after all, Mr. Pickwick's condition was no worse than that of the lady herself, who is described as enveloping her hair in a muslin nightcap with a small plaited border; yet she showed no sign of discomfiture on that account. Where Mr. Pickwick, like another Don Quixote, comes to the rescue of a supposed damsel in distress at Bury St. Edmunds all the young ladies in the school are drawn by Phiz attired in more or less ornamental nightcaps. The nightcap appears as an appropriate part of the scenery in Douglas Jerrold's *Caudle Lectures*. Passing from fiction to fact, we may recall a well-known story in which the nightcap figures in a very pleasant light. In 1813 Astley Cooper cut a rich West India merchant for stone. On taking his leave, when the case had ended triumphantly, the grateful patient flung his nightcap at the surgeon's head, saying, "There, young man, put that in your pocket." Cooper "pocketed the insult," and found in it a cheque for a thousand guineas. This is a use for the nightcap which would doubtless still meet with the approval of the profession. To this day the nightcap has not become altogether extinct; in an illustrated paper of August 3rd there is a portrait of a centenarian lady wearing such a head covering. Although the disuse into which the nightcap has fallen is a matter of recent history, there was from very early times a difference of opinion among doctors on the question. In a summary of precepts of old Chinese physicians given by Du Halde is the following: "Sleep with your head and face uncovered so that you may breathe more purely and freely." Benjamin Rush, the famous Philadelphia physician, one of the signatories of the Declaration of Independence, in his *Account of the State of the Body and Mind in Old Age*, published in 1793, says the head should be defended in old people by means of woollen or fur caps in the night, especially when the head has been deprived by time of its natural covering. Sir John Sinclair, in his *Code of Health and Longevity* (second edition, 1807), says, speaking of night clothing, that in regard to the head it has been much disputed whether it should be covered warmly or not. He quotes Cleland as contending in his *Institutes of Health* that to sleep bareheaded is a dangerous experiment; and that it is necessary to keep the head warm, especially during sleep. On the other hand, Sinclair himself says it was an old maxim for the preservation of health to keep the head cool and the feet warm. But, he says, "it is too prevalent a custom to sleep with warm nightcaps and spend one-third of one's time in this unnatural manner." He considered that the head thus became more apt to catch cold on any sudden change of the atmosphere, and that the unnatural warmth must occasion fullness of blood and other complaints. This seems to give in popular language the essence of the matter. As a possible explanation of the decline and fall of the nightcap we venture to suggest that it was connected with the passing of the wig. In the early years of the nineteenth century that adornment was still general, and it is easy to understand that the removal of a covering such as the wig of Dr. Parr, called by Sydney Smith the *μέγα θαῦμα* of barbers, caused an uncomfortable feeling of cold about the head, against which the nightcap was an obvious protection. The war has already taught us much in relation to the care of the health, and it is quite possible that one of its teachings may find expression in the revival of the nightcap. It is obvious that where susceptibility to cold is very great it affords a needed protection. As a means of mitigating the fear of fresh air, which is still too general, the nightcap, therefore, may have a new field of usefulness. If this return to ancient practice comes about, it will not be the first time in the history of medicine that a popular method rejected by one generation has been restored to favour by an advance of knowledge born of larger experience.

ACUTE POLIOMYELITIS IN NEW ZEALAND.

THE epidemic of acute poliomyelitis in New York in 1916 was of such dimensions and was so fully described that attention has naturally been focussed on this particular outbreak, and it may therefore be well to refer to Dr. Sydney Smith's report[1] on the 339 cases noted in the health district of Wellington, New Zealand, during the first four months of 1916. This was by far the most serious epidemic that has ever occurred in the Dominion, the only other of any importance being in the early part of 1914, when there were 58 cases fairly widely distributed but chiefly in the South Island. During the intervening year, 1915, New Zealand was comparatively free from the disease, 3 cases occurring in the Wellington district in March, October, and December. The outbreaks of 1914 and 1916 both began about the end of January, and reached a high level at the end of February; then the curve after falling reached its highest point at the end of March, after that the epidemic died away. In the epidemic of 1916 nearly 80 per cent. of the cases were in children under 10 years of age, and only 7.5 per cent. were in adults over the age of 20 years; 58 per cent. were males; and 46, or 13.5 per cent., proved fatal; the mortality under 1 year was 35 per cent. and over 20 years 38.5 per cent. Urban districts provided 260 cases and rural districts 77. In the main the epidemic spread from the lines of railway or steamer communications and coincided with great heat and a low rainfall. The report contains numerous charts and graphs, and gives the official recommendations for prophylaxis.

THE COAL SHORTAGE.

IN view of the serious coal shortage Sir Guy Calthrop, the Coal Controller, makes an urgent appeal to the medical profession to support his effort to effect economy in the domestic consumption of coal during the coming winter. "The country," he writes, "is faced with a serious coal shortage, and I appeal to all medical men, whose influence is so great, to do their utmost to bring the facts to the notice of all with whom they come in contact, with the view to enlisting the services of every man, woman, and child in this country in one united effort to save coal. Coal is the key industry of Great Britain and the allies, and the outlook to-day is very much more serious than is generally realized. The causes of the shortage are, first, the call to the colours of 75,000 miners to meet the peril of the German offensive in March; and, secondly, the almost complete stoppage of the mines in Northern France as a direct result of the German advance in the West. The coal of England must be shared with our allies—France, Italy, and America. It helps to carry the American army to France. It helps them to move their army while in France, and it is sold to neutrals to buy shipping to bring American troops over, and is exchanged for food. Except among the poorest houses there will not be a dwelling in Great Britain this winter with as much coal as it would like to burn. England to-day is short of 36,000,000 tons of coal. By the system of household rationing we hope to save 9,000,000 tons of coal. The deficit can be reduced—not made good—only if the miners get more coal, and if householders use less than their ration. Even then the supplies of coal to industrial works will be short, and their workpeople consequently must

[1] *Infantile Paralysis in the Wellington Health District, New Zealand.* By Sydney Smith, M.D., D.P.H., District Health Officer. 1916.

suffer. The stocks of munition works are being eaten into, gas and electric companies are crying for coal to build up their stocks against the winter months. These stocks are not being accumulated at the present time; they are being drawn upon. And we have not been able to fulfil our coal obligations to our allies. The miners' leaders have promised to do their utmost to induce the men to increase the output. Every consumer should try to manage on three-quarters of his ration." The domestic open coal fire and the ordinary kitchen stove are certainly wasteful. They must be wasteful because all the by-products are lost, and together with much soot are poured into the atmosphere to produce yellow fogs and ruin vegetation, so that in London, for instance, only a few trees will grow. The plane survives because it cleans itself by shedding its bark. Gas is at present the best substitute; it is cleanly, diminishes domestic labour, and, from a national point of view at least, it is economical. Gas stoves of good design, properly set, are not unwholesome in living rooms. The prejudice against them is due to bad patterns, badly set. The matter is a little different with regard to domestic gas cooking. Gas cookers are very convenient, and if properly managed not extravagant, but they do not warm the kitchen. If the gas engineers and gas companies would realize this and take care to fix a separate stove to warm the kitchen it is probable that the use of gas cookers would become much more popular.

PROPHYLACTIC ANTIPNEUMOCOCCIC VACCINATION.

THE success of antityphoid inoculation in the United States Army naturally suggested a similar measure against pneumonia which was responsible for probably 80 per cent. of the deaths in camp during last winter. Bacteriological examination of the first hundred cases of pneumonia at Fort Upton showed that 70 per cent. were due to the pneumococcus, and that of these about 50 per cent. were caused by types I, II, or III. In view of this and of the results obtained by F. S. Lister (vide BRITISH MEDICAL JOURNAL, 1918, i, p. 351) in the prophylactic inoculation against pneumonia of the South African miners, Cecil and Austin[1] decided to employ prophylactic injections of pneumococci types I, II, and III, vaccination against type IV being impracticable on account of its numerous varieties. The correct dosage and spacing of this vaccine and a knowledge of the reactions, local and constitutional, were determined by inoculation of forty-two volunteers, a study of the agglutinins and protective power of their serum showing a definite immune response to types I and II, but hardly any to type III. This immune response depends on the total amount of vaccine given, and is very slightly affected by the number of doses into which this quantity may be divided; but daily small doses cause hardly any reaction, whereas a single large dose is followed by several severe local and constitutional reactions. On the basis of the preliminary investigations a vaccine, with a total dosage of 6 to 9 billion pneumococci of each of types I, II, and III, was injected hypodermically in four small instalments at weekly intervals into 12,519 men between February 4th and April 15th, 1918, when the division left the camp. Among these inoculated men there was one case (recovery) of pneumonia (type I) due to the types against which inoculation had been performed; it began twenty-four hours after the only injection. During the same period there were among 19,481 non-inoculated men in the camp 26 cases of pneumonia due to types I, II, or III, with 7 deaths, or 27 per cent. It therefore appears that prophylactic vaccination protects against pneumonia due to these types, but how long the immunity lasts remains to be ascertained. The incidence of pneumonia due to pneumococcus type IV and to streptococci was much less among the vaccinated than among the unvaccinated troops, but the authors cautiously do not advance any explanation for this. The constitutional reaction to the vaccine was usually negligible; only 25 men were sufficiently ill to lie up. In those who reacted severely the symptoms resembled influenza. The local reaction resembled that seen after antityphoid inoculation; the tenderness and swelling at the point of injection usually disappeared in three or four days. In 152 cases an unexpected complication arose—namely, infiltrations at the site of injection, which rarely reached the stage of fluctuation before the sixth or seventh day; these collections were always sterile, and therefore not due, as was at first thought, to careless technique; these at first were incised, but subsequently it was found that they subsided if left alone. Painful and tender at the start, they later became cold and painless, and are considered to depend on cutaneous hypersensitiveness to the pneumococcus or pneumotoxin, but not to any one type of the pneumococcus. In the men in whom these infiltrations occurred they appeared after each dose of vaccine, and these men gave abnormally well marked reactions to intradermal injections of pneumotoxin.

[1] E. L. Cecil and J. H. Austin. *Journ. Exper. Med.*, Baltimore, 1918, xxviii, 19-41.

TUBERCULOSIS IN THE COUNTIES.

COUNTY COUNCILS in all parts of the country have the duty of administering the Public Health Regulations of 1912 through their medical officers. The extent to which this duty is carried out locally can only be judged from the official reports, but no uniform system of recording cases or of registering results has yet been adopted, and each report has to be judged upon its merits. Certain features, however, are common to them all. The better average of results following early treatment, the liability to relapse on returning to home conditions, the urgent need for segregation of actively infective cases, and finally, the complete failure of notification as an effective means of hastening the eradication of the disease. This latter consideration is brought prominently forward in his fifth annual report by Dr. Hyslop Thomson, M.O. for the county of Hertford, where the death-rate from non-pulmonary tuberculosis has in some places been found to be higher than the notification-rate. He records striking variations between different districts. The average tuberculosis death-rate for the whole county was 0.89, but the local returns showed a range from 2.1 to 0; the higher figure would appear to point unmistakably to local conditions calling for investigation. The provision of sanatorium beds would appear to be growing steadily and the demand may in time be met, but the average of ultimate success as measured by capacity for work is still far too low. Taking 60 per cent. as the rate to be aimed at, only 43 per cent. has as yet been achieved. Much good work has been done by district nurses and health visitors in following up cases after discharge. It is during the first two years after sanatorium treatment that there is the greatest liability to relapse, and for lack of intelligent regulation of home conditions much of the time and money expended is thrown away. Judging from the high proportion of such relapse, as revealed in reports, it would be well if this part of the work of county councils could be still more fully organized.

AT the Trade Union Congress, on September 3rd, a resolution was unanimously adopted declaring that the national control of milk should be made absolute at the earliest possible moment, and that the whole supply and distribution of milk should be nationally owned and managed. Mr. Stuart Bunning, in moving the resolution on behalf of the Parliamentary Committee, said that the Consumers' Council had been told that milk prices must go up and milk supplies decrease. Under the present system it was impossible to ensure for children cheap, sufficient, or anything like pure milk.

THE WAR.

THE MESOPOTAMIA DISPATCH.

THE dispatch from Lieut.-General Sir W. R. Marshall, K.C.B., K.C.S.I., published in the *Gazette* of August 29th, deals with the operations in Mesopotamia during six months—October 1st, 1917, to March 31st, 1918. It gives an account of the operations on the Diala, Tigris, and Euphrates, and the activities towards Kirmanshah undertaken to open the main trade route to Northern Persia, a district the Turks had reduced to a state of famine. The operations were carried out with skill and prudence, and the casualties in all were light. With the advent of the new year, the weather, which had been unexpectedly good in December, became consistently wet, so that continuous operations on any large scale were out of the question, and great strain was thrown on the lines of communication and supply formations. Supplies to the fighting troops were maintained with the utmost precision, and the task was greatly assisted by the arrival of extra mechanical transport companies. The Department of Local Resources took over the control of grass farms, the feeding of the civil population, and the arrangements for the collection and transportation of the coming harvest. It is hoped that by the institution of the Department of Agriculture and its co-ordination with the Irrigation Department a very large increase will be shown next year in the agricultural development of the country. A poultry farm has also been formed, primarily to supply hospitals. All this work was designed to make the force as self-supporting as possible, and consequently save sea transport. Disinfecting and repair stations and various workshops were established. The supply of good drinking water was well maintained. Automatic suction chlorination is now in general use, and mechanical plants have been erected, or are in course of erection, at all important posts. The paragraph referring to the medical services is as follows:

"The high standard of efficiency displayed by all ranks of the medical service has been most gratifying to me, and reflects great credit on Surgeon-General A. P. Blenkinsop, C.B., C.M.G., my Director of Medical Services. The health of the troops has shown marked improvement as compared with the corresponding months of 1916–17. The sanitary organization and administration has steadily progressed, and the standard of comfort and efficiency of the hospitals is most satisfactory.

"The nursing sisters have, as always, devoted themselves with untiring care and zeal to the welfare of the sick and wounded. Through the generosity and kindness of Her Excellency Lady Willingdon clubs and convalescent homes for these devoted ladies are being established at suitable centres.

"I also wish to take this opportunity of recording my gratitude, and that of all ranks under my command, for the valuable help afforded by the Red Cross Society, which has resulted in the increased comfort of the troops."

The following are among the honours and awards in connexion with military operations in Mesopotamia announced in a special supplement to the *London Gazette* issued on August 26th:

C.B.—*Colonel William H. Starr, C.M.G., ret. pay, A.M.S.

C.M.G.—*Lieut.-Colonel (temporary Colonel) George G. Delap, D.S.O., R.A.M.C., *Temporary Major (temporary Lieut.-Colonel) Robert Davies-Colley, R.A.M.C.

C.I.E.—Lieut.-Colonels: *Frederick W. Gee, I.M.S., and *Harry G. Melville, I.M.S.; *Major (temporary Lieut.-Colonel) George Macpherson, I.M.S.; Majors: Norman E. H. Scott, I.M.S., and *William R. J. Scroggie I.M.S.

D.S.O.—Majors (temporary Lieut.-Colonels): *Alfred Henry Proctor, I.M.S., *W. V. Coppinger, I.M.S.; *Major Frank P. Wernicke, I.M.S.; *Captain and Brevet Major Thomas J. Mitchell, R.A.M.C.

Military Cross.—Temporary Captains: John A. Noble, R.A.M.C., and Kenneth N. Purkis, R.A.M.C.; Lieutenant (temporary Captain) Ralph R. Thompson, R.A.M.C., temporary Lieutenant Edward A. M. J. Goldie, I.M.S., Assistant Surgeon Arthur N. de Monte, I.S.M.D.

To be Brevet Major.—Captains: *F. C. Cowtan, R.A.M.C., *A. MacD. Dick, I.M.S., *T. J. C. Evans, M.C., I.M.S., A. H. Gosse, R.A.M.C., and *S. W. Kyle, R.A.M.C.

The Royal Red Cross is conferred upon twenty-four ladies of the nursing services.

Mentioned in Dispatches.

The officers included in the list of those considered by Lieut.-General Sir W. R. Marshall, K.C.B., K.C.S.I., Commanding-in-Chief, Mesopotamian Expeditionary Force, as deserving of special mention for distinguished and gallant services (Supplement to *London Gazette*, August 27th), in addition to those mentioned above, are as follows:

Army Medical Service.—Colonels: (Temporary Major-General) A. P. Blenkinsop, C.B., C.M.G., W. T. Mould.

Royal Army Medical Corps.—Lieut.-Colonels (temporary Colonels): E. W. W. Cochrane, D.S.O., S. F. St. D. Green; Lieut.-Colonel and Brevet Colonel M. H. G. Fell, C.M.G. Major and Brevet Lieut.-Colonel (acting Lieut.-Colonel) H. J. Crossley. Major N. D. Walker. Captains: A. N. Minns, D.S.O., M.C., H. G. Robertson, E. A. Strachan, A. Watson, D.S.O. Temporary Captains: D. F. Borrie, J. T. Bowman, D.S.O., J. A. G. Burton, W. Campbell, L. W. Davies, A. R. Elliott, C. L. Emmerson, G. J. C. Ferrier (Lieut. C.A.M.C.), A. T. Gibb, E. N. Glover, E. Kidd, C. G. MacKay, G. S. Marshall, H. H. Raw, W. E. Waller, C. A. Weller. Temporary Lieutenants: (Temporary Captain) G. T. Gimlette, E. Jamieson. Temporary Quartermasters and honorary Lieutenants: S. Francis, G. B. Walker, M.C.

Royal Army Medical Corps (S.R.).—Captain (acting Major) H. M. Williams. Captains: K. P. Brown, W. Dunlop, H. L. Garson, M.C., T. P. Inglis, J. P. Mitchell, W. B. Wood. Lieutenant (temporary Captain) W. M. Cameron.

Royal Army Medical Corps (T.F.).—Major (temporary Lieut.-Colonel) F. E. Fremantle. Captains: W. H. Biggs, A. E. Bonham, V. Z. Cope, A. H. Gosse, F. T. H. Wood.

Indian Medical Service.—Lieut.-Colonels: T. B. Kelly, D.S.O., R. H. Maddox, (temporary Colonel) C. N. C. Wimberley, C.M.G. Majors (acting Lieut.-Colonels): R. M. Barron, D.S.O., L. P. Brassey, H. M. Cruddas, C.M.G., H. Innes, G. J. G. Young. Majors: S. R. Christophers, C.I.E., W. H. Leonard, F. P. Mackie, W. A. Mearns, D. Munro, C.I.E., W. Tarr, W. D. Wright. Captains: A. C. L. O'S. Bilderbeck, H. H. Brown, A. H. C. Hill, R. W. G. Hingston, M.C., A. P. G. Lorimer, R. F. D. Macgregor, M.C., J. B. de W. Molony, J. J. H. Nelson, M.C., M. A. Nicholson, M. Purvis, J. L. Sen, M.C., A. L. Sheppard, C. J. Stocker, M.C., A. J. Symes, W. O. Walker, W. L. Watson. Honorary Captain A. S. Hickling (Dental Surgeon). Lieutenant B. H. Singh. Temporary Lieutenants: A. Y. Dabholkar, M.C., S. C. S. Gupta, B. P. B. Naidu, C. E. R. Norman.

The list also contains the names of a number of warrant and non-commissioned officers and privates of the R.A.M.C., 28 assistant and subassistant surgeons of the Indian Subordinate Medical Department, 1 member of the Q.A.I.M.N.S., 19 of the Q.A.I.M.N.S.(R.), 11 of the T.F.N.S., 4 of the Q.A.M.N.S., India, 4 of the Temporary Nursing Service, India, 1 of the V.A.D., and 17 of the British Red Cross.

*These officers are also included in the list of mentions in Lieut.-General Sir W. R. Marshall's dispatch for distinguished and gallant services and devotion to duty.

CASUALTIES IN THE MEDICAL SERVICES.

ARMY.

Killed in Action.

MAJOR B. C. TENNENT, M.C., R.A.M.C.

Major Bernard Charles Tennent, M.C., R.A.M.C., was killed in action on August 22nd. He was the son of the late Rev. E. C. Tennent of Martinborough, New Zealand, and was educated at Edinburgh University, where he graduated as M.B. and Ch.B. in 1910, and as M.D. in 1913. After filling the posts of house-surgeon and house-physician at the Great Northern Central Hospital, and of house-physician at the Great Ormond Street Children's Hospital, he went back to New Zealand, and went into practice at Wellington. When war broke out he returned to England, and took a temporary commission as lieutenant in the R.A.M.C. on January 9th, 1915. He had served at the front almost ever since, being promoted to captain on completion of a year's service, and to major in May, 1918. He received the Military Cross on August 25th, 1917, and a bar thereto on January 1st, 1918.

CAPTAIN C. W. BOND, R.A.M.C.

Captain Cecil William Bond, R.A.M.C., reported missing on August 1st, 1917, is now presumed killed on that date. He was the second son of the late Mr. James Henry Bond of Milverton Court, Somerset, and was educated at Blundell's School, Tiverton, and at St. Mary's Hospital, taking the diplomas of M.R.C.S. and L.R.C.P.Lond. in 1901. Subsequently he studied at the Royal Dental Hospital, London, and took the L.D.S., R.C.S., in 1912. He served in the South African war, was for some time a surgeon in the P. and O. Company's service, and before the war was in practice at Gravesend. He joined the R.A.M.C. as a temporary lieutenant on June 1st, 1915, and was promoted to captain on completion of a year's service. After serving on the hospital ship *St. George*, and in medical command of the ss. *Aberdonian*, he went to France in the spring of 1917.

CAPTAIN J. JAFFÉ, R.A.M.C.

Captain Jacob Jaffé, R.A.M.C., was reported as killed in action, in the casualty list published on August 24th. He was educated at King's College Hospital, and took the diploma of M.R.C.S. and L.R.C.P.Lond. in 1906. After acting as senior house-surgeon of the Ingham Infirmary, South Shields, he went into practice at Stoke Newington, where he held the appointments of clinical assistant in the skin department at the Evelina Hospital for Children, anaesthetist to the London Throat Hospital, and surgeon

to the Royal Maternity Charity. He took a temporary commission in the R.A.M.C. about two years ago, and was attached to the Somerset Light Infantry when killed.

LIEUTENANT J. C. CARSON, R.A.M.C.

Lieutenant J. C. Carson, R.A.M.C., reported as killed recently, was the son of Mr. Thomas Carson of Larne, and the youngest of four brothers serving in the R.A.M.C. He was a well-known Rugby player, having represented Cardiff, Blackheath, and Ulster.

Died of Wounds.

MAJOR J. PROCTOR, R.A.M.C.

Major John Proctor, R.A.M.C., died of wounds on August 12th, aged 30. He was the eldest son of the late Mr. William Proctor of Ballater, and was educated at Aberdeen University, where he graduated M.B. and Ch.B. with distinction in 1913. After filling the posts of clinical assistant at the Samaritan Free Hospital for Women and of assistant medical officer at Grove Hospital of the Metropolitan Asylums Board he went into practice at Eye, Suffolk. He took a temporary commission as lieutenant in the R.A.M.C. on August 22nd, 1914, was promoted to captain after a year's service, and subsequently to an acting majority.

CAPTAIN W. O. HALPIN, R.A.M.C.

Captain William Oswald Halpin, R.A.M.C., was reported as having died of wounds, in the casualty list published on August 24th. He was the son of the late W. O. Halpin of Foxrock, County Dublin, and was 32 years of age. He was educated at Trinity College, Dublin, where he graduated B.A. in 1908 and M.D. in 1911. He was house-surgeon and house-physician for two years at the Metropolitan Hospital, after which he took a temporary commission as lieutenant in the R.A.M.C. on August 10th, 1914, and was promoted to captain after a year's service. He was attached to a hussar regiment when killed.

CAPTAIN M. A. MCKECHNIE, M.D., C.A.M.C.

Captain Malcolm Archibald McKechnie, whose death from wounds we recorded in our issue of August 24th (p. 201), was the son of Mr. and Mrs. T. McKechnie of Walkerton, Ontario, and was born in 1889. He graduated at Queen's University, Kingston, in 1914, and for two years acted as surgeon with the Canadian Northern Railway Company to a construction camp in the Rocky Mountains, an employment which formed an excellent training for work with the army in the field. On joining the C.A.M.C. he was appointed medical officer of the 179th Battalion, and accompanied that unit to England in October, 1916. After having served upon the standing medical boards at Folkestone and Hastings he went overseas in March, 1917, and was appointed to a Canadian field ambulance, with which unit he remained until his death.

CAPTAIN T. WHITMORE, M.D., C.A.M.C.

Captain Thomas Whitmore, C.A.M.C., whose death from wounds was reported in our issue of August 24th, p. 201, was born at Dauphin, Manitoba, in 1887, the son of Mr. and Mrs. T. Whitmore. He graduated M.D. at the University of Manitoba in 1915, and after serving as house-surgeon for a year joined the C.A.M.C., arriving in England in August, 1916. After being attached to the Canadian Cavalry Training Brigade and the Granville Canadian Special Hospital he went to the front in August, 1917, and at the time of his death was medical officer to a battalion of Canadian infantry.

CAPTAIN J. S. WILSON, A.A.M.C.

Captain J. S. Wilson, Australian Army Medical Corps, was reported as having died of wounds, in the casualty list published on August 30th.

Drowned on Service.

LIEUT.-COLONEL R. H. BRIDGES, D.S.O., R.A.M.C.

Lieut.-Colonel Roland Harley Bridges, D.S.O., R.A.M.C., was drowned on service recently, aged 39. He was born on February 7th, 1879, the third son of the late Colonel Charles Harley Bridges, Bengal Staff Corps, and was educated at St. Thomas's Hospital, taking the M.R.C.S. and L.R.C.P.Lond. in 1902. He entered the R.A.M.C. as lieutenant on January 31st, 1903; became captain on July 31st, 1906; major on October 31st, 1914, and lieutenant-colonel in 1917. He received the D.S.O. on June 3rd, 1917.

Died on Service.

MAJOR-GENERAL W. G. BIRRELL, A.M.S. (ret.).

Major-General William George Birrell, Army Medical Service (ret.), died suddenly at Lochboisdale on August 23rd, of illness contracted on active service at the front, aged 58. He was the second son of the late James Birrell, J.P., of Uttershill, Penicuik, and was born at Penicuik on September 23rd, 1859, and educated at Edinburgh Academy and Edinburgh University, where he graduated as M.B. and C.M. in 1880. He entered the R.A.M.C. as surgeon on July 30th, 1881; became surgeon-major on July 30th, 1893; lieutenant-colonel on July 30th, 1901; colonel on March 15th, 1911; and surgeon-general on March 1st, 1915, retiring on May 30th, 1918. He served in the Sudan campaign of 1885, at Suakin, receiving the medal with a clasp and the Khedive's bronze star; in the Burma campaign of 1886–87, when he was mentioned in dispatches in the *London Gazette* of September 2nd, 1887, and got the medal; in the Nile campaign of 1898, receiving the British and Egyptian medals; and in the present war as D.M.S. at Gallipoli.

DR. P. GRAY-MARSHALL.

Dr. Philip Gray-Marshall, surgeon of an Admiralty transport, died at Havre on August 14th. He was the eldest son of the late Dr. John Marshall of Edenkerry, Broomie Knowe. He received his medical education at the Royal College of Surgeons of Edinburgh, and took the triple qualification in 1902 and the D.P.H. in 1903. He had held the office of medical officer of the 3rd District, St. Vincent, West Indies, and subsequently practised in Edinburgh.

Wounded and Prisoner of War.

Captain G. Perkins, R.A.M.C.(S.R.).

Wounded.

Major F. Ellis, M.C., R.A.M.C.(T.F.).
Major F. E. Fielden, R.A.M.C. (temporary).
Major C. R. Merrilees, Australian A.M.C.
Major A. M. Wood, R.A.M.C. (temporary).
Captain A. S. Douglas, R.A.M.C. (temporary).
Captain J. V. Duhig, Australian A.M.C.
Captain J. C. Eager, Canadian A.M.C.
Captain J. C. McCullough, Canadian A.M.C.
Captain J. A. Mackenzie, Canadian A.M.C.
Captain S. A. W. Munro, R.A.M.C. (temporary).
Captain J. A. C. Scott, M.C., R.A.M.C.(T.F.).
Captain D. M. Smith, R.A.M.C. (temporary).
Captain H. C. Trumble, Australian A.M.C.
Captain Q. V. B. Wallace, R.A.M.C.(S.R.).
Captain D. R. Wark, Canadian A.M.C.
Captain T. Werner, R.A.M.C. (temporary).
Lieutenant S. B. Turner, R.A.M.C. (temporary).

Prisoners of War.

Colonel A. Milne-Thompson, C.M.G., M.C., R.A.M.C.(T.F.).
Captain M. Donaldson, R.A.M.C. (temporary).
Captain J. A. Gilfillan, R.A.M.C. (temporary).
Captain E. H. Jones, R.A.M.C. (temporary).

DEATHS OF SONS OF MEDICAL MEN.

Bonnyman, G. W., D.S.O., M.C., Captain Argyll and Sutherland Highlanders, youngest surviving son of the late Colonel Bonnyman, R.A.M.C., died recently of wounds. He was educated at Beaumont College, Windsor, and passed into Woolwich, but was rejected for eyesight, in 1906. He got a commission in the Argyll and Sutherland Highlanders on September 23rd, 1914, went to France in May, 1915, and had been out ever since, except for six months' sick leave.

Cummings, Roy Litton, Lieutenant Australian Flying Corps, second son of Dr. H. L. Cummings of Tasmania, accidentally killed on active service, August 28th, aged 22.

Davey, William A. Carthew, Second Lieutenant, only surviving child of the late Dr. Carthew Davey of Liverpool, and a medical student in his first year, was killed in action while leading his platoon on August 21st. He was a young man of ability with a promising future.

Edwards, Robert Amos, Lieutenant West Yorkshire Regiment, youngest son of Lieutenant E. H. Edwards, R.A.M.C., died of wounds on July 14th. He was educated at Merchiston, entered Sandhurst in January, 1916, got his commission the same year, went to the front in March, 1917, was wounded the following month, and went out again in April, 1918.

Fothergill, Wilfrid Thompson, Lieutenant Royal Air Force, second son of Dr. and Mrs. L. Fothergill of Blyth, Northumberland, killed in action on August 20th, 1918, aged 19 years. He was educated at Douai Abbey, Woolhampton, Reading, and at St. Cuthbert's Grammar School, Newcastle. Previous to

enlistment he was a dental student at Durham University, and when 17 joined the O.T.C. Receiving his commission in the R.A.F., he proceeded to France on August 7th, 1918.

Gray, Maurice, Captain Machine Gun Corps, second son of Dr. Alan Gray of Cambridge, killed August 9th. He was educated at Winchester, where he was in the eleven, and captain of the Association football team, and at Trinity College, Cambridge, but gave up his university career to study at the Slade School. He was in the Inns of Court O.T.C., got a commission in the 2nd Dragoon Guards on August 5th, 1914, and went to the front in June, 1915, being subsequently transferred to the M.G.C. His younger brother, Second Lieutenant E. T. Gray, Rifle Brigade, was killed on March 31st, 1918.

Hall, Basil Claude, Captain Manchester Regiment, only son of Dr. H. S. Hall, medical officer of Leigh Union, Lancashire, killed recently, aged 25. He was educated at Manchester Grammar School, and before the war was learning the cotton business.

Hardyman, John H. Maitland, M.C., Lieut.-Colonel Somerset Light Infantry (Prince Albert's Own), eldest son of Dr. Hardyman of Bath, killed August 24th, aged 23. He was educated at Fettes College, where he gained a scholarship, and at Edinburgh University, and before the war was assistant to the professor of botany there. When war broke out he enlisted in the Somerset Light Infantry, got his first commission in that regiment on February 28th, 1915, and became lieutenant-colonel last May. He had twice been wounded, had been mentioned in dispatches, and recommended for the D.S.O.

Horsley, Oswald, M.C., Captain Gordon Highlanders and Royal Air Force, youngest son of the late Sir Victor Horsley, killed flying near Wokingham on August 19th, aged 25. He was born on February 14th, 1893, educated at Bedale's School, Petersfield, and at Christ Church College, Oxford, and joined the Artists Rifles on August 3rd, 1914. He got a commission in the Gordons in November, 1914, but, after being thrice wounded, was unfit for further service in the infantry. He joined the Royal Flying Corps in August, 1917, went abroad again at the end of the year, was promoted to flight commander in March, 1918, and transferred to the home establishment in June. He gained the Military Cross while in the Gordons, and a bar thereto in the R.A.F.

Maclachlan, Donald William, M.C., Lieutenant Australian Imperial Forces, second son of Dr. Maclachlan of Beauly, killed recently, aged 32. He was educated at Beauly School and Inverness Academy, and had been for seven years in a bank in Australia, when he enlisted at Melbourne, subsequently gaining a commission. He got the Military Cross at Ypres in November, 1917, and was wounded in December.

MacLennan, Aeneas Adam, Private Canadian Forces, of Swalwell, Alberta, son of the late Dr. Urquhart MacLennan of Widnes, Lancs, died of wounds on August 16th, aged 24.

O'Sullivan, T. G., Lieutenant Royal Engineers, killed in action on August 21st. He was the son of the late Dr. T. G. O'Sullivan, and brother of Dr. W. J. O'Sullivan of Limerick.

Terres, Hugh, Lieutenant, son of Dr. J. B. Terres, United States Consul-General, killed flying on August 17th, aged 31. He was educated at Westminster and at Christ Church College, Oxford.

Wells, James Bowen Primrose, Lieutenant Bedfordshire Regiment, son of Dr. Primrose Wells of Victoria, and of Pinner Wood Ranch, British Columbia, seriously wounded and taken prisoner on March 27th, and died of wounds as a prisoner on April 4th. He came to Europe with the second Canadian Contingent, and subsequently got a commission in the Bedfords.

Whitaker, Victor John, Captain R.F.C., reported missing on April 6th, 1917, and now officially presumed to have died on or about that date, was the second son of Dr. J. Smith Whitaker (of the National Health Insurance Commission), and was born at Great Yarmouth on June 22nd, 1897. With his elder brother Owen (Second Lieutenant R.G.A., M.C., killed in action August 29th, 1915) he was educated at University College School, where he was a member of the Officers' Training Corps. In October, 1915, he received his commission as Second Lieutenant in the 3rd Battalion Lincolnshire Regiment, was transferred subsequently to the Royal Flying Corps, obtained his wings in May, 1916, and proceeded at once to the front in France, where he served continuously (except for two short periods of leave) till his death. Having proved himself an exceptionally dextrous and fearless, though careful, pilot, he was promoted Temporary Captain and Flight Commander in February, 1917, being still only 19. He was brought down on Good Friday while engaged in a difficult reconnaissance of German positions, east of Vimy Ridge, taken three days later by our army.

Young, Philip, Lieutenant Middlesex Regiment (the 57th, or "Diehards"), son of the late Dr. Young of Hawkhurst, died in the Empire Hospital, Westminster, on August 21st, of wounds received on April 12th. He got his commission on May 18th, 1915.

MEDICAL STUDENTS.

Edmiston, Allan John, Second Lieutenant Scottish Rifles, aged 20, died from gas poisoning. He was the third son of ex-Provost Edmiston of Rutherglen, and was a medical student at Glasgow University. His two brothers are on active service.

Elliott, F. P., Lieutenant Manchester Regiment, killed recently. He was educated at Manchester Grammar School and University, where he was a medical student before he joined the army.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

HONOURS.

THE following are the statements of conspicuous gallantry and devotion to duty for which the distinctions announced in the *London Gazette* of March 26th, 1918 (BRITISH MEDICAL JOURNAL, April 6th, p. 411), were awarded:

Military Cross.

Captain Alan Colpitts Ainsley, R.A.M.C.

Whilst attending to a man seriously wounded a shell burst within a few yards of his position and knocked him down. Despite this, he continued with his work and showed the greatest coolness and devotion to duty throughout the day.

Temporary Captain William Kenneth Bigger, R.A.M.C.

He personally assisted in getting his wounded away from the dressing station under heavy machine-gun and rifle fire. Previous to this he had gone out from the dressing station on several occasions to tend the wounded at a time when no stretcher-bearers were available. He showed great gallantry and devotion to duty.

Captain William Edward Hugh Bull, R.A.M.C.

When in charge of a bearer section and collecting post, he worked under shell and rifle fire, and with a few stretcher-bearers collected and tended a number of wounded cases under conditions demanding the utmost coolness, gallantry, and determination, qualities which he displayed in the highest degree.

Temporary Captain Nicholas Marshall Cummins, R.A.M.C.

He gave valuable assistance to a unit after a successful attack in the organization of stretcher bearers, and he also organized several parties at night, which he conducted into "No Man's Land," for the purpose of recovering wounded cases. He worked on until every case had been evacuated, when he collapsed from exhaustion. His courage and devotion to duty were of the highest order.

Captain Charles Aubrey Godson, I.M.S.

During an all day attack he organized stretcher parties and collected the wounded, often under shell fire, and at night searched the whole area covered by the attack and cleared it of all the wounded. It was largely due to his courage and initiative that the evacuation of the wounded was carried out so successfully.

Captain William Goldie, R.A.M.C.

The rapid and successful evacuation of the wounded, when in charge of a collecting station, in advance of the advanced dressing station, during an attack, was due to his untiring zeal and energy. He showed magnificent courage and coolness under heavy fire, and set a splendid example to those under him.

Temporary Captain Benjamin Knowles, R.A.M.C.

He was wounded at the beginning of an enemy attack, but returned to his aid post and remained there, attending to the wounded throughout with great determination and coolness.

Captain Percival John Moir, R.A.M.C.

While he was leading a party of thirty men and eight camels to a forward position in order to establish an advanced dressing station, the party came under heavy shell fire. He at once got his party under cover, unloaded the camels, and then got his medical stores forward under continuous shell fire. His promptness and courage not only prevented casualties, but enabled the advanced dressing station to be established at the earliest possible moment.

Captain Charles Newton-Davis, I.M.S.

During the attack, when the battalion was brought to a standstill by frontal and enfilade fire of all kinds, he exposed himself continually in moving from place to place to render aid to wounded cases. It was owing to his courage, devotion to duty and skilful organization, that the wounded were successfully collected and evacuated.

Temporary Captain Rex Stansfield, R.A.M.C.

During an engagement he carried his medical pannier forward through a heavy barrage and moved about under heavy shell fire over the captured ground, collecting and bringing in the wounded. He set a splendid example of courage and devotion to duty.

Captain Bryan Montague Tuke, R.A.M.C.(S.R.).

He went forward himself with the attacking companies, and throughout the engagement kept moving from one part of the line to another in full view of the enemy, attending to the wounded with the greatest promptitude and courage.

Captain Rankine Greig Walker, R.A.M.C.

He was in charge of an advanced dressing station during two engagements, and carried out his duties with great courage and skill, often under heavy shell fire.

Temporary Lieutenant V. K. Apte, I.M.S.

He attended to the wounded during an action with great courage and coolness.

Lieutenant Claude Wells Woolloton Baxter, I.M.S.

When under heavy shell and rifle fire he displayed great gallantry and devotion to duty in attending to and evacuating the wounded. His services proved of inestimable value.

OPERATIONS IN GERMAN SOUTH-WEST AFRICA.

The following awards have been conferred for services rendered in connexion with military operations in German South-West Africa:

C.M.G.—†Colonel Herbert J. M. Buist, D.S.O., attached S.A.M.C., from R.A.M.C.; †Lieut.-Colonel Ronald P. McKenzie (R. of O.), S.A.M.C.

O.B.E.—†Major Harry E. Brown, S.A.M.C.; Captain (temporary Major) Thomas F. Cope, S.A.M.C.

D.S.O.—Officers of the South African Medical Service: Lieut.-Colonels †Servase M. De Kock, George H. Knapp; †Major Leonard H. Haydon; †Captain George B. Moffat.

Military Cross.—Officers of the South African Medical Service: Captains (temporary Majors) John Pratt-Johnson, Robert N. Pringle, D.S.O., James A. Thwaits, Robert H. Welsh; Captain (acting Major)

† These officers are also mentioned in General Botha's dispatch for distinguished service in the field during the campaign in German South-West Africa.

Thomas J. W. A. Johnston; Captains John E. Briscoe, D.S.O. (R. of O.), Guillaume J. Cillie, James J. Lynch, Arthur E. Oakley, Frans Karel Te Water.

The Meritorious Service Medal has been awarded to four warrant officers of the South African Medical Corps and one of the R.A.M.C., and the Royal Red Cross to sixteen members of the South African Military Nursing Service.

The Croix de Guerre has been conferred by the President of the French Republic upon Captains †Alexander D. Edington, †Gideon J. Joubert, M.C., and †William W. McCowat, all of the S.A.M.C.

The Secretary of State for the Colonies has received from the Governor-General and Commander-in-Chief, Union of South Africa, a list of officers and other ranks whose names have been brought to notice by General Louis Botha for distinguished service in the field in connexion with the campaign in German South-West Africa, 1914-15. The list includes the following officers of the South African Medical Corps:

Lieut.-Colonels: J. I. Brownlee, D.S.O., V.D., J. Hewat (R. of O.), G. H. Knapp, H. T. Murcell, C. R. Porter (R. of O.).

Majors (temporary Lieut.-Colonels): B. A. Odlum (Captain R.A.M.C.), G. H. Usmar, A. B. Ward, D.S.O.

Majors: T. A. Fuller (R. of O.), G. D. Maynard, J. R. McGregor, M. W. McLoughlin, D.S.O. (supernumerary list), R. Milner-Smyth, J. A. Mitchell, H. A. Moffat, D.S.O. (R. of O.), F. H. Napier, A. M. Neethling, M. G. Pearson, F. Pershouse, R. A. St. Leger, W. B. Skinner, D.S.O., P. Skinner-Clark, D.S.O., E. N. Thornton, O.B.E., P. J. Van Coller, J. H. Whitehead, D.S.O.

Captains (temporary Majors): E. T. E. Hamilton (deceased), D. Horwich, C. T. Moller.

Captains: C. V. Anderson, A. W. Burton, D. Campbell-Watt, W. R. Chew, W. S. Cottrill, D. J. Danth (R. of O.), J. F. van der S. De Villiers, J. W. De Vos, L. K. Edmeades, R. Friel, J. F. R. Gairdner, A. J. Girdwood, R. L. Girdwood, D.S.O., C. Grobbelaar, A. Groenewald, M.C. (deceased), S. Leibson, M.C., C. F. L. Leipoldt, J. J. Levin, A. H. Louw, M.C., Permanent Force (Staff), R. C. Mullins, C. M. Neale-Hay, P. la F. Nortje, A. J. Ortlepp, J. Z. H. Rosseau, T. L. L. Sandes, O.B.E., C. P. Theron (R. of O.), R. M. Truter, E. F. B. Wilson (R. of O.), W. O. Wilson.

The list also contains the names of a number of warrant and non-commissioned officers and privates of the S.A.M.C., as well as five members of the South African Nursing Service.

Major D. Dougal, M.C., R.A.M.C., has been awarded the French Croix de Guerre with palms.

The King has granted unrestricted permission to Miss Elizabeth Phillips, M.B., to wear the insignia of the Fourth Class of the Order of St. Sava, conferred upon her by the King of Serbia in recognition of her services with the Scottish Women's Hospitals in Serbia.

Naval Operations at Ostend.

Surgeons S. S. Beare, R. Buddle, and B. S. Collings, R.N., are among those mentioned in Vice-Admiral Sir Roger J. B. Keyes's dispatch on the second blocking operation against Ostend as "rendering good service in attending wounded and during the transportation of wounded at sea."

Foreign Decorations.

The President of the French Republic has conferred the decorations indicated upon the following officers of the Royal Naval Medical Service for distinguished services rendered during the war: *Legion of Honour—Officer:* Deputy Surgeon-General A. G. Wildey; *Chevalier:* Fleet Surgeons F. J. A. Dalton, R. D. Jameson, and A. J. Hewitt.

Correspondence.

VANGHETTI'S OPERATION.

SIR,—About your article on Vanghetti's operation (July 20th, 1918, p. 68): The terms "cinematization" and "cinematize" are twenty years old and of common use. Only some friend in private letters writes of "vanghettization" and "vanghettize." As you affirm, it has been not at all proved that the idea belongs to others, as was hinted only by Sauerbruch without any proof. The book of Beaufort, cited by him, does not contain anything at all about the "surgical cinematic prosthesis." The same is to be said of other writings of Beaufort. Sauerbruch wrote also that one contemporary (who?) of Larrey (which of the three, 1700–1800?) had planned the idea; but he has forgotten any citation.

On the sentimental field, perhaps, the idea is much more ancient. I gave in *Chirurgia degli Organi de Movimento*, No. 1, 1918, the fac-simile of the transplantation of an entire leg, painted by Beato Angelico. On the scientific field there is no proof that the priority belongs to any other than to myself, and I would be very obliged to any one who could demonstrate the contrary.

The misunderstanding must have originated from this fact, that my term "mechanical cinematic prosthesis"—that is, without any bloody or unbloody surgical treatment—includes also that proposed first by Beaufort. After all, every new invention relates to one old desire of somebody.

Heartily thanking you, I am, etc.,

Empoli, August 25th. DR. G. VANGHETTI.

THE BURDEN OF COSTLY REMEDIES.

SIR,—If my friend Dr. Fulton thinks that the fact that the action against which I protested at the Representative Meeting occurred under the administration of the Insurance Act in any way influenced me in what I said he is very greatly mistaken. Had it taken place under the common law of the land, or even "Dora," I should have acted and spoken just as I did on that occasion. It did not interest me in the slightest whether or no Dr. Fisher's case were good or bad. The important thing, in my opinion, was that here was a new point of considerable moment to some millions of insured persons and some thousands of insurance practitioners and chemists, and no decision or ruling upon it had been given by the duly constituted authority. The methods of procedure to obtain this object are laid down by statute and regulations, and it was entirely within the right of Dr. Fisher to demand that in his case the matter should be thoroughly discussed, and all sides heard before decision. I objected, and still object, that a senior member of a learned profession, and one who holds the important position in his district which Dr. Fisher does, should be "scolded" for insisting on those rights. The contention that the last paragraph of the Commission's judgement applies only to Dr. Fisher's attorney I brush aside at once. Dr. Fisher was the head and front of the offending—*Qui facit per alium facit per se.*

But there is something else in Dr. Fulton's letter to which I must most strongly demur. The contention that any Government department or official is to be immune from all criticism and adverse comment whatever may be done or said by it or him because no reply can be made is quite incapable of maintenance. In the first place, is it a fact? Government officials, from ministers downwards, frequently reply to attacks and criticism (vide *Times*, August 29th). In the second place, if there were such an immunity then it cuts both ways, and doubly and trebly is it incumbent on such a body or person never to give cause for such criticism, or allow the issue of such a paragraph as the one to which I referred.—I am, etc.,

London, W., Sept. 2nd. E. B. TURNER.

GENERAL PRACTITIONERS AND VENEREAL DISEASE.

SIR,—I thoroughly endorse every word of Dr. Hogarth's statements, and if more attention and legislation were paid and obtained for this, so ever so much better for the "United Kingdom." If isolation for these female carriers were obtained by legislation some good would be obtained. They take no advice or treatment (treatment too expensive privately, and too public at dispensaries), but parade about and spread disease wholesale. When at last they are driven to see a doctor, the general practitioner is affected because they can get treatment for nothing, being "panel" or "drifters," or because he will not notify them (as they think dispensaries do, since they have to give their names, etc.). This also applies to men—soldiers, sailors, and discharged soldiers and sailors, and merchant seamen, and also, in a larger extent, to civilians of all classes. I may say, further, that those female sections of the community follow and congregate near all camps of our soldiers and sailors, and so spread disease.

The only effectual method of eradicating these diseases from the community is to segregate every case, making no exceptions, until they are proved completely cured of disease.—I am, etc.,

Bradford, Aug. 26th. W. M. MACILRAITH, D.P.H.

THE MENINGOCOCCUS OF WEICHSELBAUM.

SIR,—In the BRITISH MEDICAL JOURNAL is an interesting letter from Mr. J. Ramsbottom criticizing a paper of mine which appeared on the subject in the JOURNAL on September 22nd, 1917. Mr. Ramsbottom appears to be less concerned with the facts recorded in my paper than with the terminology which I employed in the interpretation of those facts. The use of this terminology may or may not have been justified, but in subordinating the importance of facts to that of labels there is always a danger of obscuring

a fundamental truth, and the critic may do less than justice to his subject and to himself by failure to recognize this danger. In Mr. Ramsbottom's case the danger is all the greater because his letter clearly shows, as I shall explain, that he is unaware of the special optical conditions under which my observations were conducted, and also because he has committed himself to a stronger statement on a technical point in mycology than is perhaps justifiable.

Let me, however, at once confess that I cannot lay claim to the smallest fraction of the mycological knowledge which my critic so eminently possesses. Unhappily, the average student of bacteriology cannot to-day hope to be a mycologist, or a protozoologist, nor, be it said, an astronomer or a watchmaker. In my own case, indeed, it is quite possible that I may eventually have to abandon as untenable the view that the giant meningococcus is a meningoascus, the organism which is the subject of my critic's polemics. And this is precisely why I was careful to point out in a footnote that my label was purely provisional. So anxious, however, is Mr. Ramsbottom to deny me any sanctuary that he throws caution to the winds, before he has had an opportunity of examining the living meningoascus at first hand, and delivers himself of a somewhat pontifical announcement on a subject of which mycologists of European reputation are content to speak with considerable restraint. He tells us, for example, that the Hemiascomycetes have no independent existence, and that members of this fictitious group, notwithstanding that they are given a section to themselves in one of the standard textbooks of mycology, "have, so far as studied, proved to belong definitely to" the Phycomycetes or Ascomycetes. Merely as an illustration, one would like to know if this degree of certainty has been reached in the case of Dangeard's genus Protascus. It is quite possible that, as with the Fungi Imperfecti, the Hemiascomycetes may eventually prove in all cases to be a temporary clearing-house, and Mr. Ramsbottom is fully entitled in his own mind to anticipate events. But he is not entitled, if he will forgive my saying so, in criticisms specifically addressed, amongst others, to "those who profess no knowledge of mycology," to present as fully proven that which is not yet fully proven. His conclusion, therefore, that all fungi with asci are Ascomycetes, meaning—as his context shows—the Ascomycetes proper, is hardly a fair statement to make to laymen in connexion with my specific use of the word Hemiascomycete, unless he at the same time fully explained Brefeld's view of the ascus proper as a phylogenetic modification of the sporangium. And this he has not done. The whole point of my use of the term "hemiascus" was that the meningoascus does not appear to be either a true sporangium or a true ascus, but yet that it has characteristics of both which perhaps justified its provisional inclusion in that type of fungus which is as yet phylogenetically in the position of not having arrived. Admirable, therefore, as Mr. Ramsbottom's description is of the ascus proper his question as to how my hemiascus agrees with a typical ascus is somewhat irrelevant, especially as I had made it quite clear that, although it had some ascoid features, it differed from a fully arrived ascus in the absence of perithecium, and in the possession of a variable number of spores.

I now come to three observations by Mr. Ramsbottom which he would perhaps not have made if he had fully grasped the optical conditions employed as described in my paper. I am anxious not to be unduly argumentative, but I hope he will forgive me for pointing out how gravely he has been misled through not having seen the organisms himself in the living state. The observations I refer to are these:

1. "The increase in the number of spores in the same ascus is not commented on, though it would be amazing in any fungus with so few spores, and is of itself sufficient to cast doubt on the whole paper. Does this 'ascomycetic organism' differ from the rest of the fungi with endospores in that there is not simultaneous spore formation? If there is not simultaneous spore formation how does the number of spores increase? One would not expect the spores to increase by budding in such a form, though the difference in size of the spores, which is, so far as my memory serves, unique, may perhaps suggest that such takes place; but the relative positions in the cells is against this view, and the last four drawings seem to indicate that the difference in size is due to growth."

2. Dr. Hort's "representations of budding in the chart are very unlike what one ever sees in cultures."

3. "The Hemiasci of Brefeld were a group which were characterized by having an indefinite number of spores in a single sporangium (not, be it remarked, a variation in number in the same sporangium)."

These observations have been made with the greatest care, and, though it sounds a paradox, I am grateful for them. They have taught me much, and if I were to do them the justice they deserve I should exceed the space limit. I must therefore be content with the following brief reply.

Owing to the unusually low refractive index of the meningoascus the use of even a high dry lens is of little value, and a good apochromatic oil immersion lens of not less than 1.5 mm. diameter with a suitable N.A. is essential for study of detail. For the same reason the thinnest possible layer of medium must be employed, with consequent risk of distortion by temporary adhesion to the cover-slip or slide. Pressure with a cover-slip must be employed to restrain movement, and to make possible the use of an oil immersion lens when examining the living organism. Many of the buds, both attached and detached, are extremely small, many close to the vanishing point of vision. The larger organisms appear to be fragile and easily deformed. I have little doubt, after continuous observation for several hours at a time over a period of many months, that the endospores may be practically invisible at first, and gradually come into view through gradual enlargement, as in the undoubted case of a well-known Ascomycete.

I have repeatedly formed the impression, though I cannot put it at stronger than impression, that the endospores whilst still within the "ascus" will sometimes undergo equal binary fission, as some of the asci undoubtedly may, other free asci undergoing budding. Only an expert in mycology can tell us whether equal fission of intra-ascal spores is as well known to occur as unequal fission. As no doubt Mr. Ramsbottom is aware, a meningococcus or other coccoid organism, just previous to the appearance of a well marked cleavage line, will often temporarily appear to be considerably larger than the fully separated pair, however closely apposed, will do, and will even take on the appearance of a short ovo-bacillary form. Once cleavage is complete the spherical appearance of each well-formed coccus is manifest, as well as an actual shrinkage in size. Apart from the obvious disparity in size between a single recently divided coccus and the coccus preparing for fission this fugitive enlargement of an endospore about to divide, if my impression is well grounded, may perhaps explain variation in the size of endospores in one ascus or in several, and the suggested equal dichotomy of intra-ascal spores might also account for a true variation in the number of endospores. I have never been able absolutely to satisfy myself, apart from this last, which, as I say, is only an impression, that there is any actual increase in the number of endospores in a given "ascus" (meningoascus). An apparent increase is often seen, as my drawings show. This apparent increase is undoubtedly due in some instances, as I was careful to explain in my paper, as a possible source of error, to rotation and dipping movements of the containing ascus, leading to the sudden appearance of a pre-existing but previously invisible endobody, though I cannot say that this apparent increase can always be thus explained, often on account of eyestrain showing itself at a most inconvenient moment. It should, however, be remembered that under the best conditions these endospores are difficult to see satisfactorily, and the difficulty is often increased by the sudden, but not always noted, advent of minute free spores attaching themselves in consequence of slight streaming movements, to an "ascus" under observation.

Mr Ramsbottom's chief troubles, therefore, appear to me to be largely explicable by the fact that he has perhaps not realized that it is impossible to judge of the special difficulties imposed on study of the meningoascus of low refractive index with an oil immersion lens in terms of experience of more easily observed organisms of higher refractive index with a dry lens. And my comments on his difficulties as to variation in the size of the spores, the apparent variation in their number, and consequently on his chief difficulty as to the apparent absence of simultaneous spore formation, as well as to intra-ascal equal binary fission of one or more endospores, he will, I am sure, duly consider.

There remain five smaller points which I should perhaps deal with.

1. By mycelial sprouting I mean the formation of a "true mycelium."

2. "This apparently means that, although the spores are placed in the conditions under which there is abundant vegetative growth, they refuse to germinate—an unexpected phenomenon" (p. 205, line 44 et seq.).

In answer to this I would say, Does not the undoubted fact that the endospores of Ascobolus, for example, will only germinate freely after passage through the alimentary canal of herbivorous animals make the phenomenon of reluctant germination of the meningospore in young cultures less unexpected than the above sentence would suggest?

3. "All non-motile fungus spores have definite cell walls, whereas these are absent in Meningococcus."

I am not certain that in an early stage my endospores are not motile, and the motility of even fully developed meningococci has been reported on by at least one good observer, though not generally confirmed.

4. Mr. Ramsbottom laments that "the young cells are drawn as being without cell contents, and so it is impossible to tell whether they are originally uninucleate, as are all young asci, and also what nuclear changes take place therein."

It cannot of course be meant by this that I am expected to draw what I do not see. In point of fact, the statement is not quite accurate, because in a few cases young cells are drawn showing cell contents. But, as I have explained, the meningoascus, whether large or small, has a genius for defying satisfactory examination of its contents, nuclear or what not, and if this were not the case, it would have been comparatively easy, even for me, and much more so for the mycologists who have seen it in the living state, to determine its true nature.

5. "There is little or no evidence that it (the Meningoascus) is even a fungus."

I must admit that I did not specify the absence of chlorophyll, nor the absence of true parenchyma—cardinal characteristics, in their associated absence, of undoubted fungi. Nevertheless, there does not appear to be any chlorophyll or true parenchyma, and the meningoascus does resemble a hemiascus in its absence of perithecium and in its indefinite number of spores, with still further resemblance to a fungus in the exhibition of gemmation, endosporulation, and mycelial formation. All these points suggesting a fungus may eventually prove to be illusory, but in the meanwhile there they are.

What, then, are these organisms? They are not, as my experiments proved, contaminating organisms, as many profess to believe. They are not involution forms, that last resort of the mentally destitute. They are not plasmokinetic forms, exhibiting the phenomena of abnormal degrees of plasmolysis or plasmoptysis, produced by varying concentrations of solutes within or without the cell, as the disciples of Fischer aver. They are not the expression of a specific response to a specific stimulus provided by a specific element in environment, whatever precisely that may mean.

I perhaps rashly suggested that they were hemiasci, but if there is a better name, *tant mieux*. Whatever else they are, or whatever else they are called, they are not simple bacteria. This is the basic fact for which my paper gives abundant evidence, and to establish which the paper was written; and I trust Mr. Ramsbottom will absolve me from contumacy in thus attempting to place my facts and the ordinary textbook labels, important as these are, in what appears to me a fair perspective.—I am, etc.,

London, W., Aug. 30th. EDWARD C. HORT.

ABSTRACTS OF MEDICAL LITERATURE.

SIR,—I am in a remote part of the country, and so have not seen recent issues of your JOURNAL, but a friend informs me that you have a "leader" in the current number on the need for activity in furnishing abstracts of current medical literature and commending the steps the Medical Research Committee are taking in this direction. May I take the opportunity of congratulating your JOURNAL for this timely expression of this useful view and at the same time draw the attention of your readers to the steps the Physiological Society are taking, and have taken since 1916, in the publication of *Physiological Abstracts*, which is published by H. K. Lewis and Co., Ltd., 136, Gower Street, W.C.2. This journal aims at issuing promptly abstracts of the papers published throughout the world in physiological and allied sciences. Although I may be a biassed witness, I nevertheless venture to think that this aim is being very satisfactorily reached, and as pathology is one of the sciences most closely allied to physiology, it is possible that readers of your JOURNAL anxious to obtain the latest views in pathological science will find *Physiological Abstracts* of service to them. A number is published at the beginning of every month. The present volume (vol. iii) began last April, and already more than 2,000 abstracts have appeared in it. The subscription price is 25s. per annum, but separate numbers of this and preceding volumes can be obtained at 4s. each.—I am, etc.,

W. D. HALLIBURTON,
Editor of *Physiological Abstracts*.

King's College, Strand, W.C.2, Aug. 21st.

P.S.—The price at which we are compelled to issue *Physiological Abstracts* emphasizes the point made in your article that such publications cannot be produced on a purely commercial basis.

Obituary.

ROBERT SAUNDBY, M.D.EDIN., F.R.C.P.LOND.,

Emeritus Professor of Medicine, University of Birmingham; one time President of the British Medical Association.

WE greatly regret to have to record the death, on August 28th, after a long illness, of Dr. Robert Saundby of Birmingham, ex-president of the Association and at one time chairman of its Council.

Robert Saundby was born in London on December 19th, 1849, and as a very young man went out to India as a tea planter. Owing to a breakdown in health, due in part to a serious riding accident, he returned home, and, with some hesitation, due apparently to the fact that he had passed the age when the study of medicine usually is begun, he entered as a medical student at the University of Edinburgh. There he had a brilliant career, and graduated M.B., C.M. in 1874; he was house-physician first to the Royal Infirmary and then to the Royal Hospital for Diseases of the Chest. His standing as a student is shown by the fact that he was senior president of the Royal Medical Society of Edinburgh. In 1876 he was appointed pathologist to the General Hospital, Birmingham, and became physician to it in 1885; this office he retained for twenty-seven years. When, in 1912, he retired the governors marked their appreciation of his services by electing him consulting physician and placing his portrait in oils in the board room. As a member of the medical committee of the board of the hospital he gave careful attention to administrative work, and was a fearless advocate of any measure he believed would benefit the institution. He was also for a long period professor of medicine in the University of Birmingham, and on his retirement was appointed Emeritus professor. He was a member of the Midland Medical Society; from 1895 until 1899 president of the Birmingham Medical Institution, and it was largely due to his influence that the library has been brought to its present state of excellence. Dr. Saundby became a Member of the Royal College of Physicians in 1878, and was elected a Fellow in 1887. In 1890 he gave the Bradshaw Lecture on the morbid anatomy of diabetes mellitus—a subject in which he always took particular interest, and upon which he wrote in *Allbutt's System of Medicine*. Last year he gave the Harveian oration, taking for his subject Harvey's work considered in relation to scientific knowledge and university education in his time.

Dr. Saundby had a ready pen, and made numerous contributions, signed and unsigned, to medical literature. His book on the treatment of diseases of the digestive system reached a second edition in 1914, and his lectures on renal and urinary diseases a fourth edition in 1900. He also wrote a volume on the care and treatment of old age, and a short book on urgent symptoms in medical practice in 1915. The position he attained in Birmingham and in the British Medical Association led him to take particular interest in the subject of medical ethics, upon which he published a volume, which reached a second edition in 1907. It was a very valuable work in its day, and may be said to have laid the foundation for the medico-ethical work of the British Medical Association, which has been much extended by the present Medico-Ethical Committee. His connexion with the Association was long—honourable to him and useful to it. He became a member in 1875, and from the first took a deep interest in the local work. At the annual meeting at Birmingham in 1890 he was one of the general secretaries, and much of the success of that meeting was due to his organizing ability. He was president when the Association again met in Birmingham in

1911; his presidential address was largely concerned with the subjects of medical education, the functions of voluntary hospitals, and the relation of medicine to the State. He was chairman of the Council of the Association from 1896 to 1899, was vice-chairman of the Constitution Committee which sat during that period, and in many ways took a very active part in the conduct of the affairs of the Association, giving his services without stint. He represented the University of Birmingham on the General Medical Council from 1905 to 1917, and gave the Ingleby Lecture in the university in 1894. He was Middlemore Lecturer in 1892.

Dr. Saundby married in 1880, and had three sons and one daughter; one son, who was an officer in the Flying Corps, was killed about eighteen months ago, and the two others are on active service. He was himself a lieutenant-colonel R.A.M.C., Territorial, as noted below.

The funeral service at the Cathedral, conducted by the Bishop of Birmingham, was attended by many members of the profession and other friends. The British Medical Association was represented by Major A. Lucas, member of the Council, and by Dr. J. R. Ratcliffe, Honorary Secretary of the Birmingham Branch. The remains were cremated at the Birmingham Crematorium.

Mr. GILBERT BARLING, C.B., Vice-Chancellor of the University of Birmingham, and long Dr. Saundby's colleague at the General Hospital, has been good enough to send us the following tribute:

When I first made the acquaintance of Robert Saundby, now nearly forty years ago, he was assistant physician to the General Hospital. He was a handsome, intellectual looking man, full of enthusiasm for the scientific side of medicine and a prodigiously hard worker; his enthusiasm and his industry remained to the end of his life. The value of his services to Medicine in his own immediate district can hardly be overstated. With perhaps less clinical acumen than some of his immediate colleagues in medicine, his bent of mind naturally led him to investigation and to the pursuit of methods in which he excelled; these dominated his work and his teaching. The value of the latter was most appreciated by senior students, and especially by those who had the good fortune to be his house-physicians. In obscure conditions his wide knowledge of medical literature was a source from which his colleagues were always glad to obtain help. Saundby was a prolific writer, especially on nephritis, diabetes, disorders of digestion, old age and its care, and on medical ethics. Everything he wrote was thoroughly sincere, and was based on, or corrected by, his own observations. He used his position as physician to the General Hospital to the full; conscientious to a degree with regard to the well-being of his patients, he was none the less so towards the great opportunities his post gave him to promote the advance of medicine. But his labours did not end there, for he was always ready to devote himself without stint to the administrative work of the hospital, whether at the board of management or at the medical committee; on both his business-like methods and his critical faculty made him most helpful. The British Medical Association owes much to the indefatigable efforts of Saundby in the Midland district as well as at the central office. Locally he was perhaps chiefly interested in promoting the scientific work of the Association in the Branch meetings and in the Pathological Section. When the Association held its meeting at Birmingham in 1911 by universal consent and acclamation he was elected President, a position he filled with conspicuous success. It would be ungrateful to forget the services he rendered as editor of the *Birmingham Medical Review*, which would have died of inanition but for his endeavours. Equally or even more valuable was the interest he showed in the Medical Institute of which he was for many years the librarian, and for a long period the president. The provision of this excellent meeting place for all the medical societies, and the extension of its library, owe more to Saundby than to any other person. Some four years ago the early indications of cardiac insufficiency began to show themselves, and perhaps it would have been better if our friend had recognized the wisdom of lessening his work, but this was foreign to his nature, and when he was mobilized as Lieutenant-Colonel, *a la suite*, in the Territorial Service he threw himself into the new duties with his usual ardour; undoubtedly they strained and over-tired him gravely, and in my opinion they shortened his days. Those who only knew Saundby slightly will perhaps recall occasional offence arising out of temperamental irritability. It would be idle to deny this defect, but it did not represent the real man, and when the moment of irritability was over no one had deeper regret for the incidents than he himself. The dignity and courage with which he bore his prolonged illness and his later great suffering a thousand times redeemed what was in truth a surface fault which was never associated with malice or ill will. For myself I can speak of him as a highly-cultivated man, a most loyal and honoured friend and colleague, an inspiration to others to do the best in them. His memory will long be cherished by those who had the privilege of his friendship.

C. E. GLASCOTT, M.D.,

Consulting Surgeon, Manchester Royal Eye Hospital.

IT is with great regret that we have to announce the death, on August 14th, of Dr. Charles Edward Glascott at his home at Budleigh Salterton, South Devon. Charles Edward Glascott was born in 1847 at Constantinople, and received his education in Edinburgh at the Royal High School and the University. He graduated M.B., C.M. in 1868, and obtained the F.R.C.S.Edin. in 1886. He started practice in Manchester, and soon became known as one of the leading ophthalmological surgeons; for thirty-five years was honorary surgeon to the Manchester Royal Eye Hospital, and, in conjunction with the late Dr. Little, undoubtedly assisted very greatly in making that hospital one of the foremost centres for the treatment of eye disease in the North of England. Later he became senior consulting surgeon and one of the vice-presidents of the institution. He is perhaps best remembered as lecturer and examiner in ophthalmology at the Manchester University, his lectures being always eminently practical and to the point. He was identified with a number of institutions and societies for the study of eye diseases and the care of the blind. He was the author of a considerable number of monographs on ophthalmological subjects, among which may be mentioned those on the causes and prevention of blindness, published in the reports of the Henshaw's Blind Asylum, Manchester, to which he was honorary oculist. For many years he took an active interest in the work of the British Medical Association, especially on the scientific side; he acted as secretary of the Ophthalmological Section at the annual meeting at Liverpool in 1883, and was vice-president of this section at the annual meeting at Glasgow in 1888 and at Manchester in 1902.

Under a somewhat brusque military manner, which sometimes on first acquaintance made students and hospital patients rather afraid of him, there was really concealed a tenderness and interest in their welfare which quickly endeared him to all who had the privilege of coming under his care. His old pupils, who include a considerable number of the leading eye specialists in the North, greatly missed him when he retired some years ago from Manchester to reside in Devonshire, and have learnt with the deepest regret of his death.

The Services.

INDIAN MEDICAL SERVICE.

Additional Administrative Appointments.

APPROVAL has been given to the creation, for the period of the war, of additional military administrative appointments in the Indian Medical Service up to eight in number. The appointments will carry the rank of Colonel, and will be filled as circumstances demand. Service in them will count towards the additional pension of £250 per annum for which Colonels of the Indian Medical Service are eligible after five years' active service in that rank.

Indian Army Pensions.

The Secretary of State for India has decided to alter the conditions under which Indian Good Service Pensions may be awarded to officers of the Indian Army and Indian Medical Service, to officers of Royal Artillery selected for continuous Indian service, and to officers of Royal Engineers who have been elected for continuous Indian service or who have acquired a right to an Indian retiring pension.

In future only general officers and colonels on the retired list and such officers of the Indian Army of those ranks as have, owing to suspension of retirements, elected to draw pay equivalent to pension, and officers of the Indian Medical Service on the retired list of not less than twenty-five years'

service, will be eligible for selection. In the case of officers of the Indian Medical Service, the possession of an additional pension for administrative service under paragraphs 728 and 731, A.R.I., vol. i, or of a compensatory extra pension under paragraph 734 of the same, will disqualify for selection for a Good Service Pension.*

TERRITORIAL DECORATION.

THE Territorial Decoration has been conferred upon Lieut.-Colonels (temporary Colonels) R. Pickard, L. P. Demetriadi, J. M. Crombie, and W. E. Foggie, and Majors C. A. Goullet, G. Black, and J. W. Cook, all of the R.A.M.C.(T.F.), as well as upon Major C. E. Goddard, M.D., of the T.F.(R.).

THE ORDERING OF DECORATIONS.
D.S.O., M.C., AND D.C.M.
Services in Action.

THE Army Council have decided that, in respect of services in the army, the Distinguished Service Order, the Military Cross, and the Distinguished Conduct Medal shall be regarded, as from August 1st last, as distinctions to be awarded for "services in action" only. The term "services in action" shall be held to mean:

1. Services under fire.
2. Distinguished individual services in connexion with air raids, bombardments, or other enemy action which at the time produces conditions equivalent to services in actual combat, and demands the same personal elements of command, initiative, or control on the part of individuals, and, in a lesser degree only, possibly entails the same risks.

In no circumstances will any exception to this rule be allowed.

An Army Council Instruction (754 of 1918) was issued on July 10th showing the order in which Orders, Decorations, and Medals should be worn. The Victoria Cross takes precedence of all. Then follow the Garter, the Thistle, St. Patrick, the Bath, the Order of Merit, Star of India, St. Michael and St. George, the Indian Empire, the Crown of India, the Royal Victorian Order (Classes 1, 2, and 3), the G.B.E., K.B.E., and C.B.E. The D.S.O., the D.S.C. (naval), and the Military Cross come after several civilian orders. This has excited some criticism.

EXCHANGE.

REGIMENTAL Medical Officer in Northern Command would like to exchange with M.O., Regimental for preference, but not essential; in Western Command, if possible, near to Manchester. Address No. 360, BRITISH MEDICAL JOURNAL Office, 429, Strand, W.C.2.

Universities and Colleges.

UNIVERSITY OF LONDON.
ST. THOMAS'S HOSPITAL.

THE second Entrance Science Scholarship (£60) has been awarded to M. C. Sivakaŕa, and N. G. Harris and Emrys Williams have been honourably mentioned.

SOCIETY OF APOTHECARIES OF LONDON.

THE following candidates have passed in the subjects indicated:

SURGERY.—†J. Behesnilian, *†J. Gorsky, *W. H. Haupt, †B. A. M. Henderson, *†F. Lyth, *†H. Lyth, *H. E. Reburn, *†G. P. N. Richardson, *†W. H. Steavenson, *†J. Stephen.

MEDICINE.—*†H. Carter, *†W. H. Haupt, *†W. D. Macrae, *†G. P. N. Richardson.

FORENSIC MEDICINE.—J. F. E. Burns, F. I. G. Edwards, W. H. Haupt, W. H. Steavenson.

MIDWIFERY.—F. I. G. Edwards, I. R. Florence, W. H. Haupt, J. A. Marriott.

*Section I. †Section II.

The diploma of the Society has been granted to Messrs. J. Behesnilian, J. Gorsky, F. Lyth, H. Lyth, G. P. N. Richardson, W. H. Steavenson, and J. Stephen.

LONDON INTERCOLLEGIATE SCHOLARSHIPS BOARD.

THE following are the results of the examination for medical scholarships held in July last:

University College.—Bucknill Scholarship: I. W. Gallant. Medical Exhibitions: H. Rosenberg, B. Deane, Rachael Halperin (*proxime accessit*).

King's College.—Warneford Scholarships: P. B. Wilkinson, M. G. L. Perkins, L. H. Savin.

Westminster Hospital Medical School.—Natural Science Scholarship: M. Stieber.

King's College Hospital Medical School.—Science Scholarship: Christine P. Francis. Arts Exhibition: W. P. H. Sheldon.

London (Royal Free Hospital) School of Medicine for Women.—St. Dunstan's Medical Exhibitions: Margaret E. Reynolds, Ellen M. Sword. Isabel Thorne Scholarship: Ethel A. Perrott. Mabel Norman-Crawford Scholarship: Dorothy N. L. Leverkus.

DR. NILO PEÇANHA, Brazilian Minister of Foreign Affairs, has lately announced that Brazil is sending a medical mission of fifty doctors, besides a number of students, to France. They are to be attached to the Brazilian Hospital in the zone of operations.

Medical News.

THE Minister of Pensions is making a strong appeal for contributions to the King's Fund for the Disabled. The King has handed over to the fund the City of London silver wedding gift, amounting to £53,000, and £25,000 from his own purse. The fund is vested in trustees, of whom Mr. Hodge, the Minister of Pensions, is chairman, and it is hoped to raise a sum of three millions. The object of the fund is to help disabled men to establish themselves in businesses, and in suitable circumstances to help women also; 2,500 cases have already been dealt with, but it is found that the sum of £25, hitherto the the maximum of any grant, is in many cases insufficient.

As already announced, Dr. Truby King, on the invitation of the Chester Local Medical and Panel Committee, will give an address on infant welfare centres to a meeting of medical officers of health and medical officers and members of the committees of the centres in Cheshire, at the Crewe Arms Hotel, Crewe, on Saturday, September 14th, at 3.30 p.m.

AN elementary course of lectures on infant care, for teachers, infant welfare workers and mothers, arranged by the National Association for the Prevention of Infant Mortality (4, Tavistock Square, London, W.C.1), will be given at 1, Wimpole Street, beginning on September 30th.

A PREPARATION for preventing condensation on laryngoscopic mirrors, microscopic and camera lenses, spectacles, and other glass surfaces has been placed on the market by Messrs. Arnold and Sons, 6, Giltspur Street, E.C.1. It is called "Clarocit," is easily applied, and appears to be effective.

AN American war hospital established on the east coast of Scotland has recently been taken over by the American navy. The American staff, consisting of twenty-two medical officers, sixty-three nurses, paymaster, clerical staff, orderlies, and artisans, was organized at Los Angeles, California, by Dr. Rea Smith, surgeon U.S.N., and the commanding officer is Dr. C. M. Devalin, U.S.N. The equipment has been brought from America. British patients from both army and navy are to be received in the hospitals as well as patients of corresponding American services.

THE medical department of the United States Army has appointed to each camp a division surgeon, who is responsible for its health. To assist him he has a sanitary officer and a sanitary engineer, with from one to two hundred men. Particular attention is given in all camps to the cleaning up of places which are breeding grounds for mosquitos and flies. It has sometimes been found necessary to dig channels in streams, drain swamps, and do elaborate ditching work in order to clean stagnant pools. Where it has been found impracticable to drain swamps, slow moving streams and bodies of still water are kept covered with oil, and points within the camp where there is any possibility of mosquitos or flies breeding are daily sprayed with oil. Arrangements have been made with the Federal Public Health Service to carry out similar measures in the territories adjacent to camps. All buildings in which food is prepared or stored are screened. Flytraps have been placed in all buildings; on an average there are 6,000 such traps in each camp. More than 22,700,000 square feet of screening have been used in the camps.

FROM the reports made to the annual general meeting of the Professional Classes War Relief Council it appears that over ten thousand applications had been dealt with, and that the professions most hardly hit by the war were those of musicians, artists, architects, and journalists. It was reported that during 1917 the amount received in subscriptions and donations was £22,802, and on the last day of that year the immediately available assets were £17,945, in spite of an expenditure out of the general fund during the year of upwards of £23,500. The sum of £7,379 had been received during 1917 from American sympathisers, making more than £10,000 in all from that source. During what had passed of the current year, £10,840 had been received and £12,750 expended. The chief expenditure had been upon education—that is to say, the keeping of children at suitable schools. Mrs. Scharlieb, M.D., states that at the Maternity Home supported by the Council about 450 infants had been born, most of them the children of men serving in the forces; in addition fifty mothers had been supported in their own homes, and in some twenty other instances the means had been furnished for the women to find assistance elsewhere.

Letters, Notes, and Answers.

ORIGINAL ARTICLES and LETTERS *forwarded for publication are understood to be offered to the* BRITISH MEDICAL JOURNAL *alone unless the contrary be stated.*

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

The postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Mediocra, Westrand, London;* telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

QUERIES AND ANSWERS.

INCOME TAX.

S. T. took over a practice in April, 1917, and has made his income tax return for special assessment "under a letter." Is he bound to accede to the local surveyor's request for a copy of the accounts of the practice from the date of taking over from his predecessor?

*** There is no legal obligation to comply with the request, but at the same time the Special Commissioners are not bound to accept the return, and would no doubt compare it with the past assessments of the practice. If "S. T." did not take over the book debts his "cash" profit would not fairly represent the true profit of the year 1917-18, which, with the last two years of his predecessor, would form the average for assessment. On the whole the request seems not unreasonable, and we would recommend our correspondent to see the surveyor with the figures if practicable. After all, if his return is not accepted the accounts could be demanded on appeal being made against the assessment. We may perhaps add that "S. T." is under a slight misapprehension. The Special Commissioners do not assess under a letter. That is a mode of local assessment rarely adopted.

LETTERS NOTES, ETC.

WE have received a letter from Mr. H. W. Bywaters, D.Sc., of Bristol, taking exception to the publication of his name in a leaflet issued by Vitamogen, Ltd. He desires it to be known that the publication should not be taken to imply that he considers "that there are any vitamines in the above mentioned preparation." We have also received a letter from Vitamogen, Ltd., to the effect that they acted innocently in issuing the leaflet, believing that they had Dr. Bywater's consent.

THE CASE OF MR. EDWARD YEATES, F.R.C.S.I.

WE have already referred on several occasions to the circumstances under which Mr. Edward Yeates, F.R.C.S.I., was charged with wearing military uniform without lawful authority. Mr. Yeates desires it to be understood that he was appointed, did duty, and was paid as a captain in the New Zealand Expeditionary Force under King's Regulations, and has never resigned, been dismissed, or paid off from that Expeditionary Force. The date of his appointment was September 17th, 1914, and that of the *New Zealand Gazette*, purporting to appoint him to the New Zealand Territorial Force, was October 17th, 1914, at which time he was in Samoa. He denies that he ever belonged to or did duty in that Territorial Force which, he adds, is not under King's Regulations. His contention is that he was found guilty of wearing the uniform of a force to which he never belonged and the uniform of which he never wore. It was, we understand, on the charge of wearing this uniform which he did not claim to wear that he was summoned at the instance of the War Office to a police court.

SCOTTISH POOR LAW MEDICAL OFFICERS.

A SCOTTISH MEMBER writes that superannuation should be provided for Scottish Poor Law medical officers. He expresses the hope that the Scottish Committee of the British Medical Association will give early attention to the matter.

COLLOSOL MANGANESE AND BOILS.

MIRABILE DICTU writes: Having suffered for a year and eight months from repeated attacks of boils, and used autogenous vaccine, stanoxyl, and most drugs in the Pharmacopoeia, I tried collosol manganese intramuscularly—result, no more boils; what was evidently a large one, with distinct boggy pus, cleared up in a week.

TREATMENT OF SCABIES.

CAPTAIN ERNEST KINGSCOTE, M.B., C.M. (London, W.1), writes to point out that the treatment of scabies recommended by Oppenheim, as noted in the JOURNAL of August 24th (p. 207), is not new. It was, he says, in 1882 the generally accepted method of treating scabies at the Allgemeine Spital, Vienna, in the clinic of Kaposi. "Whether the latter suggested this treatment or his predecessor Hebra I do not remember. In 1883 I saw the same treatment carried out at the Hôpital St. Louis in Paris, only in this instance a starch bath was substituted for the zinc paste, and usually completely removed the irritation."

CHELOID.

NORTHERN PRACTITIONER writes: I was much interested the other day in seeing a very marked case of cheloid disease of the skin in a man of middle life, slightly grey, who did not appear to have any other illness. The appearance presented was that of stripes a quarter of an inch broad of pinkish raised skin running in all directions, on the shoulders, arms, and chest, sometimes the well marked claw of three radiating stripes from one extremity which gives rise to the name. The patient said the marks began as heat spots originally; there it was idiopathic. There is a good description of the disease in *Allbutt's System of Medicine* by Dr. Abraham, but we are still in doubt as to the etiology of the disease. It would appear to have a nervous origin like herpes.

THE INAUGURAL ADDRESS.

THE presidential address at the opening of congresses and sessions of scientific bodies is valuable as giving an opportunity for a survey of the gains in knowledge achieved in a given period, but it may have other even more practical uses. An amusing instance was given by Professor W. T. Councilman in an address delivered to the graduate class of the Harvard Medical School. Some time ago he happened to be in the capital of a Brazilian State a fortnight after a gubernatorial election. There had been the customary occurrences which such an event in a Brazilian city produces—some fifty people killed, three that number wounded, a newspaper office blown up, and on numerous houses the peculiar pits made by the modern jacketed bullet. At the time of Dr. Councilman's arrival, everything was going on as usual, but he was informed that arrangements had been made to blow up the Governor on his way home after the inaugural address, but the possibilities of that species of eloquence had not been taken into account. The orator spoke at great length, reciting the history of the country from its discovery, describing its existing conditions, and indulging in prophecies as to its future development. Hours passed, and still the address flowed on without any apparent prospect of coming to an end. The conspirators were nervous, the exciting events had robbed many of them of their customary siesta, and under the soothing influence of the orator many slept; others, for various reasons, discovered that they had business elsewhere. In this way the company faded away into thin air; the audience gradually departed with the taxis which were to have formed the procession, and the Governor was finally left speaking to a single devoted friend, who went home with him by a back way. The country for a time was saved.

ERRATUM.

IN the note by Dr. Clippingdale on "London's Medical Sheriff," for "Thomas Horesbede" read "Thomas Morestede." Thomas Morestede was present as a surgeon both at Crecy and Poictiers.

THE appointment of certifying factory surgeon at Spilsby (Lincoln) is vacant.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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All remittances by Post Office Orders must be made payable to the British Medical Association at the General Post Office, London. No responsibility will be accepted for any such remittance not safeguarded.

Advertisements should be delivered, addressed to the Manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.